IMPERIAL INSTITUTE
OF
AGRICULTURAL RESEARCH, PUSA.

THE

ENTOMOLOGIST'S MONTHLY MAGAZINE

EDITED BY

R. B. BENSON, M.A., F.L.S., F.R.E.S.
K. G. BLAIR, D.Sc., F.R.E.S.
H. G. CHAMPION, M.A., F.R.E.S.
J. E. COLLIN, F.R.E.S.
B. M. HOBBY, M.A., D.Phil., F.R.E.S.
R. W. LLOYD, F.R.E.S.
H. SCOTT, M.A., Sc.D., F.L.S.

VOLUME LXXV.
[THIRD SERIES. VOL. XXV.]

> 'J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.'—*Laboulbène.*

LONDON:
NATHANIEL LLOYD & CO., LTD.,
BURRELL STREET WORKS, BLACKFRIARS, S.E.1.
1939

PRINTED AT
THE HOLYWELL PRESS
OXFORD

CONTENTS.

PAGE
Contributions to the Study of the Palpicornia. II (*with figures*).—*J. Balfour-Browne, M.A., F.Z.S.* 1
Request for Books for the West China Union University.—*Eds.* 8
Coleoptera in a limited area at Oxford.—*J. J. Walker, M.A., R.N., F.L.S.* 9
Chrysopilus nubecula Fallén (Diptera: Rhagionidae), a species new to Britain (*with figure*).—*H. Oldroyd, B.A.* 12
The Mallophaga (Biting-lice) recorded from the Pacific Islands (*continued*). *G. B. Thompson* 13
The Victoria County History of Cambridgeshire.—*G. J. Kerrich* 18
A diminutive example of Pissodes notatus Fab.—*J. J. Walker, M.A., R.N., F.L.S.* 18
Xanthandrus comtus Harris in Dumfriesshire.—*J. Murray* 19
Gonepteryx rhamni on the wing in December.—*J. E. Campbell-Taylor* ... 19
OBITUARY.—Mr. Rosse Butterfield 19
SOCIETY.—Entomological Club 20
Notes on British Collembola.—*R. S. Bagnall, D.Sc.* 21

Request for Hepialid Caterpillars.—I am anxious to secure large numbers of Hepialid caterpillars, especially **humuli** and **lupulinus**, and would be grateful to know of any areas where they are known to be present in sufficiently large numbers to warrant digging. Any caterpillars sent to me would also be much appreciated.—**Stanley Garthside**, Farnham House Laboratory, Farnham Royal, Bucks.

AUTHORS are requested to send their communications and proofs to J. J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford.

Subscriptions for 1939, which are payable in advance, should be remitted as soon as possible to

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

THE NATURALIST:
A MONTHLY ILLUSTRATED JOURNAL OF
NATURAL HISTORY for the NORTH OF ENGLAND.
EDITED BY
W. H. PEARSALL, D.Sc., F.L.S., AND W. R. GRIST, B.Sc., The University, Leeds.
with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Prof. A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1875, and is circulated widely among the principal Naturalists of the country.

LONDON. A. BROWN AND SONS, LIMITED, 4 FARRINGDON AVENUE, E.C.4.
And at Hull.
PRICE 1/6 NETT. Prepaid Subscription 15/- per annum, post free.

Now Ready.

SYSTEMATIC NOTES UPON BRITISH AQUATIC COLEOPTERA. Vol. I.—HYDRADEPHAGA.

By FRANK BALFOUR-BROWNE, M.A. (Oxon et Cantab.), F.R.S.E., F.R.E.S., F.Z.S., F.L.S., F.R.M.S. (formerly Professor of Entomology at the Imperial College of Science, London).

A new edition, with many changes, of the series of notes which appeared in the Entomologist's Monthly Magazine during 1934 to 1936.

Cloth Bound. Price 3s. 6d. Packing and Postage 4d. extra.

Nathaniel Lloyd & Co., Ltd., Burrell St. Works, Blackfriars, London. S.E.1.

THE NORTH WESTERN NATURALIST.

A Scientific and Educational Journal (published quarterly)

Especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, F.C.S., A.L.S.
In Collaboration with H. BRITTEN, F.R.E.S.

Rev. G. H. CARPENTER, D.Sc.,
W. E. COLLINGE, D.Sc., F.S.A.,
R. H. CORSTORPHINE, B.Sc.,
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.,
J. W. JACKSON, M.Sc., F.G.S.,
C. L. WALTON, M.Sc., Ph.D.,
F. E. WEISS, D.Sc., F.R.S.,
A. WILSON, F.L.S., F.R.Met.S.

COMMUNICATIONS TO

Editorial: A. A. Dallman, F.C.S., A.L.S., 12 Tickhill Road, Doncaster.
Business: T. Buncle & Co., Market Place, Arbroath.

Annual Subscription 7s. 6d. Single Copies, 2s.

Arbroath: T. BUNCLE & Co., Market Place.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

The price of the Magazine is 15/- per annum to Subscribers and 2/- a part of 24 pages for single copies.

PRICES FOR BACK NUMBERS AND VOLUMES.

1ST SERIES, 1864—1889.—Vols. 1 to 25. These can be obtained in many cases in complete Volumes. Many of the single parts can also be supplied separately. Particulars on application to the Publishers.

2ND SERIES, 1890—1914.—Part 284, 5/- each; Parts 237, 241, 249, 261, 262 and 294, 4/- each. Remaining Parts, 3/6 each. Volumes, 25/- net each, bound, 4/- extra.

3RD SERIES, 1915—1938.—Part 610, 12/6 each; 786, 788, 792, 795, 798, 800, 803, 807, 6/- each; 751, 5/- each; 628, 791, 793, 856, 4/- each; 784, 3/- each. Remaining Parts, 2/6 each. Volumes, 23/6 net each, bound, 4/- extra.

SUBSCRIPTION FOR 1939 (*payable in advance*), 15/- *net, post free.*

Cloth cases for binding the 1938 Volume can be supplied at 2/- net, post free.

All applications for the above should be made to—

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

Also obtainable at Messrs. GURNEY & JACKSON, 98 Great Russell Street, W.C.1.

CONTENTS.

PAGE

Notes on British Collembola (*with figures*) (*continued*).—*R. S. Bagnall, D.Sc.* 25

EDITORIAL 29

Triphleps laevigata Fieber (Hem., Anthocoridae) new to Britain.—*H. Britten, F.R.E.S.* 29

Odd notes on Migrant Lepidoptera at Sea.—*Fl.-Paym. T. B. Fletcher, R.N., F.L.S.* 31

Phlogophora meticulosa L. (Lepidopt.): emergence in December.—*W. J. Watts* 31

New and additional Haliplid records for Eire and some notes on variation in British specimens of Haliplus fulvus F. (Coleopt.).—*Rev. E. J. Pearce, M.A., F.R.E.S.* 32

New Myrmecophilous Staphylinidae (Col.) from East Africa.—*M. Cameron, M.B., R.N., F.R.E.S.* 36

An unusual association of Apions.—*F. B. Jennings* 38

British Museum (Natural History), Department of Entomology: a suggestion to students.—*Anon.* 39

OBITUARY.—Dr. Charles Joseph Gahan 40

SOCIETY.—Entomological Club 40

Additions to the British Homoptera (*with figures*).—*W. E. China, M.A.* 41

AUTHORS are requested to send their communications and proofs to
DR. B. M. HOBBY, 7 Thorncliffe Road, Oxford.

FOR SALE

ELTRINGHAM'S 'Monograph of the African species of the Genus *Acraea* Fab.' (1912).

FOWLER'S 'Coleoptera of the British Isles.' 5 vols. Illustrated Edition, 1887-1891. Wants re-binding.

FOWLER and DONISTHORPE ditto. Vol. VI. Supplement. 1913. In good condition.

STEPHENS'S 'Illustrations of British Entomology. Mandibulata' 5 vols. 1828-1835. Fine copy bound in Russian leather.

STEPHENS'S 'Manual.' 1839. Original Edition. Many synonyms in side margins.

DAWSON'S 'Geodephaga Britannica.' 1854. Original Edition. Half-calf. Nice copy. Some synonyms in side margins.

REITTER'S 'Fauna Germanica.' 5 vols. 1906-1916.

WHAT OFFERS?

HORACE DONISTHORPE, Brit. Mus. of Nat. Hist., Entomological Department.

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY for the NORTH OF ENGLAND.

EDITED BY

W. H. PEARSALL, D.Sc., F.L.S., AND W. R. GRIST, B.Sc., The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Prof. A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1875, and is circulated widely among the principal Naturalists of the country.

LONDON. A. BROWN AND SONS, LIMITED, 4 FARRINGDON AVENUE, E.C.4.
And at Hull.

PRICE 1/6 NETT. Prepaid Subscription 15/- per annum, post free.

Now Ready.

SYSTEMATIC NOTES UPON BRITISH AQUATIC COLEOPTERA. Vol. I.—HYDRADEPHAGA.

By **FRANK BALFOUR-BROWNE**, M.A. (Oxon et Cantab.), F.R.S.E., F.R.E.S., F.Z.S., F.L.S., F.R.M.S. (formerly Professor of Entomology at the Imperial College of Science, London).

A new edition, with many changes, of the series of notes which appeared in the Entomologist's Monthly Magazine during 1934 to 1936.

Cloth Bound. *Price* ***3s. 6d.*** *Packing and Postage 4d. extra.*

Nathaniel Lloyd & Co., Ltd., Burrell St. Works, Blackfriars, London. S.E.1.

THE NORTH WESTERN NATURALIST.

A Scientific and Educational Journal (published quarterly)

Especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, F.C.S., A.L.S.
In Collaboration with H. BRITTEN, F.R.E.S.

REV. G. H. CARPENTER, D.Sc.,
W. E. COLLINGE, D.Sc., F.S.A.,
R. H. CORSTORPHINE, B.Sc.,
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.,
J. W. JACKSON, M.Sc., F.G.S.,
C. L. WALTON, M.Sc., Ph.D.,
F. E. WEISS, D.Sc., F.R.S.,
A. WILSON, F.L.S., F.R.Met.S.

COMMUNICATIONS TO

Editorial: A. A. Dallman, F.C.S., A.L.S., 12 Tickhill Road, Doncaster.
Business: T. Buncle & Co., Market Place, Arbroath.

Annual Subscription 7s. 6d. Single Copies, 2s.

Arbroath: T. BUNCLE & Co., Market Place.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

The price of the Magazine is 15/- per annum to Subscribers and 2/- a part of 24 pages for single copies.

PRICES FOR BACK NUMBERS AND VOLUMES.

1ST SERIES, 1864—1889.—Vols. 1 to 25. These can be obtained in many cases in complete Volumes. Many of the single parts can also be supplied separately. Particulars on application to the Publishers.

2ND SERIES, 1890—1914.—Part 284, **5/-** each; Parts 237, 241, 249, 261, 262 and 294, **4/-** each. Remaining Parts, **3/6** each. Volumes, **25/-** net each, bound, **4/-** extra.

3RD SERIES, 1915—1938.—Part 610, **12/6** each; 786, 788, 792, 795, 798, 800, 803, 807, **6/-** each; 751, **5/-** each; 628, 791, 793, 856, **4/-** each; 784, **3/-** each. Remaining Parts, **2/6** each. Volumes, **23/6** net each, bound, **4/-** extra.

SUBSCRIPTION FOR 1939 (*payable in advance*), **15/-** *net, post free.*

Cloth cases for binding the 1938 Volume can be supplied at **2/-** net, post free.

All applications for the above should be made to—

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

Also obtainable at Messrs. GURNEY & JACKSON, 98 Great Russell Street, W.C.1.

CONTENTS.

PAGE
Additions to the British Homoptera (*with figures*) (*continued*).—*W. E. China, M.A.* 49
Notes on British Collembola (*concluded*).—*R. S. Bagnall, D.Sc.* 56
Gymnetron collinum Gyll. (Col., Curculionidae) in East Kent.—*H. W. Daltry, F.R.E.S.* 59
The Gall-making Hymenoptera of some of the Western Islands of Scotland. —*J. W. Heslop Harrison, D.Sc., F.R.S.* 60
Argyroploce leucotreta Meyr. (Lep., Eucosmidae) bred in Britain.—*J. Hignell* 63
In Memoriam.—James John Walker, M.A., R.N., F.L.S. (*with portrait*) ... 64
Lucanus cervus L. and Clytus arietis L. (Col.) in February.—*K. G. Blair, D.Sc., F.R.E.S.* 70
The Mallophaga (Biting-lice) recorded from the Pacific Islands (*continued*). —*G. B. Thompson* 71

AUTHORS are requested to send their communications and proofs to Dr. B. M. Hobby, 7 Thorncliffe Road, Oxford.

FOR SALE

Eltringham's 'Monograph of the African species of the Genus *Acraea* Fab.' (1912).
Fowler's 'Coleoptera of the British Isles.' 5 vols. Illustrated Edition, 1887-1891. Wants re-binding.
Fowler and Donisthorpe ditto. Vol. VI. Supplement. 1913. In good condition.
Stephens's 'Illustrations of British Entomology. Mandibulata' 5 vols. 1828-1835. Fine copy bound in Russian leather.
Stephens's 'Manual.' 1839. Original Edition. Many synonyms in side margins.
Dawson's 'Geodephaga Britannica.' 1854. Original Edition. Half-calf. Nice copy. Some synonyms in side margins.
Reitter's 'Fauna Germanica.' 5 vols. 1906-1916.
WHAT OFFERS?
Horace Donisthorpe, Brit. Mus. of Nat. Hist., Entomological Department.

THE NATURALIST:
A MONTHLY ILLUSTRATED JOURNAL OF
NATURAL HISTORY for the NORTH OF ENGLAND.
EDITED BY
W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc., The University, Leeds.
with the assistance as referees in special departments of
H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Prof. A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.
The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1875, and is circulated widely among the principal Naturalists of the country.
London: A. Brown and Sons, Limited, 4 Farringdon Avenue, E.C.4.
And at Hull.
PRICE 1/6 NETT. Prepaid Subscription 15/- per annum, post free.

Now Ready.

SYSTEMATIC NOTES UPON BRITISH AQUATIC COLEOPTERA. Vol. I.—HYDRADEPHAGA.

By **FRANK BALFOUR-BROWNE**, M.A. (Oxon et Cantab.), F.R.S.E., F.R.E.S., F.Z.S., F.L.S., F.R.M.S. (formerly Professor of Entomology at the Imperial College of Science, London).

A new edition, with many changes, of the series of notes which appeared in the Entomologist's Monthly Magazine during 1934 to 1936.

Cloth Bound. *Price* ***3s. 6d.*** *Packing and Postage 4d. extra.*

Nathaniel Lloyd & Co., Ltd., Burrell St. Works, Blackfriars, London. S.E.1.

THE NORTH WESTERN NATURALIST.

A Scientific and Educational Journal (published quarterly)

Especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, F.C.S., A.L.S.

In Collaboration with H. BRITTEN, F.R.E.S.

Rev. G. H. CARPENTER, D.Sc.,
W. E. COLLINGE, D.Sc., F.S.A.,
R. H. CORSTORPHINE, B.Sc.,
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.,
J. W. JACKSON, M.Sc., F.G.S.,
C. L. WALTON, M.Sc., Ph.D.,
F. E. WEISS, D.Sc., F.R.S.,
A. WILSON, F.L.S., F.R.Met.S.

COMMUNICATIONS TO

Editorial: A. A. Dallman, F.C.S., A.L.S., 12 Tickhill Road, Doncaster.
Business: T. Buncle & Co., Market Place, Arbroath.

Annual Subscription 7s. 6d. Single Copies, 2s.

Arbroath: T. BUNCLE & Co., Market Place.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

The price of the Magazine is 15/- per annum to Subscribers and 2/- a part of 24 pages for single copies.

PRICES FOR BACK NUMBERS AND VOLUMES.

1ST SERIES, 1864—1889.—Vols. 1 to 25. These can be obtained in many cases in complete Volumes. Many of the single parts can also be supplied separately. Particulars on application to the Publishers.

2ND SERIES, 1890—1914.—Part 284, **5/-** each; Parts 237, 241, 249, 261, 262 and 294, **4/-** each. Remaining Parts, **3/6** each. Volumes, **25/-** net each, bound, **4/-** extra.

3RD SERIES, 1915—1938.—Part 610, **12/6** each; 786, 788, 792, 795, 798, 800, 803, 807, **6/-** each; 751, **5/-** each; 628, 791, 793, 856, **4/-** each; 784, **3/-** each. Remaining Parts, **2/6** each. Volumes, **23/6** net each, bound, **4/-** extra.

SUBSCRIPTION FOR 1939 (*payable in advance*), **15/-** *net, post free.*

Cloth cases for binding the 1938 Volume can be supplied at **2/-** net, post free.

All applications for the above should be made to—

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

Also obtainable at Messrs. GURNEY & JACKSON, 98 Great Russell Street, W.C.1.

CONTENTS.

PAGE

The Mallophaga (Biting-lice) recorded from the Pacific Islands (*continued*). —*G. B. Thompson* 73

A Selected and Classified Bibliography of J. J. Walker's Publications, 1872—1939.—*Sir Edward B. Poulton, D.Sc., F.R.S.* 77

Additional records of British species of Triphleps (Hem., Anthocoridae).—*H. W. Daltry, F.R.E.S.* 79

A New British Opius (Hym., Braconidae) (*with figures*).—*G. E. J. Nixon, B.A.* 80

On the Affinities of the Genus Eclytus Holmgren (Hym., Ichneumonidae) (*with figures*).—*J. F. Perkins, B.Sc.* 82

Formica rufa L. (Hym., Formicidae) once more protected by German Law. —*B. D. W. Morley* 83

Three New Species of Lamellicorn Beetles from the Caroline Islands.—*G. J. Arrow* 84

Swiss Coleoptera in Early Spring.—*Rev. Prof. L. W. Grensted, F.R.E.S.* 87

Insects bred from Owl-pellets.—*E. W. Aubrook* 88

Rediscovery of Agrilus biguttatus F. (Col., Buprestidae) in Sherwood Forest. —*D. Tozer* 88

Reviews.—'The British Caddis Flies (Trichoptera).' By M. E. Mosely 89
'A Butterfly Book for the Pocket.' By E. Sandars 89
'A Monograph of the British Neuroptera.' By F. J. Killington 89

Society.—Entomological Club 90

Notes on British Collembola.—*R. S. Bagnall, D.Sc.* 91

AUTHORS are requested to send their communications and proofs to Dr. B. M. Hobby, 7 Thorncliffe Road, Oxford.

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY for the NORTH OF ENGLAND.

EDITED BY

W. H. PEARSALL, D.Sc., F.L.S., AND **W. R. GRIST, B.Sc.,** The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.	**Riley Fortune, F.Z.S., F.R.P.S.**
J. M. Brown, B.Sc., F.L.S., F.R.E.S.	**Prof. A. Gilligan, D.Sc., F.G.S., M.I.M.E.**
W. H. Burrell, F.L.S.	
Chris. A. Cheetham, F.R.E.S.	**Mrs. Elsie M. Morehouse.**
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.	**Thos. Sheppard, M.Sc., F.G.S., F.Z.S.**
	T. W. Woodhead, Ph.D., M.Sc., F.L.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1875, and is circulated widely among the principal Naturalists of the country.

London. A. Brown and Sons, Limited, 4 Farringdon Avenue, E.C.4.
And at Hull.

PRICE 1/6 NETT. Prepaid Subscription 15/- per annum, post free.

Now Ready.

SYSTEMATIC NOTES UPON BRITISH AQUATIC COLEOPTERA. Vol. I.—HYDRADEPHAGA.

By **FRANK BALFOUR-BROWNE,** M.A. (Oxon et Cantab.), F.R.S.E., F.R.E.S., F.Z.S., F.L.S., F.R.M.S. (formerly Professor of Entomology at the Imperial College of Science, London).

A new edition, with many changes, of the series of notes which appeared in the Entomologist's Monthly Magazine during 1934 to 1936.

Cloth Bound. Price ***3s. 6d.*** *Packing and Postage 4d. extra.*

Nathaniel Lloyd & Co., Ltd., Burrell St. Works, Blackfriars, London. S.E.1.

THE NORTH WESTERN NATURALIST.

A Scientific and Educational Journal (published quarterly)

Especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, F.C.S., A.L.S.
In Collaboration with H. BRITTEN, F.R.E.S.

Rev. G. H. CARPENTER, D.Sc.,
W. E. COLLINGE, D.Sc., F.S.A.,
R. H. CORSTORPHINE, B.Sc.,
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.,
J. W. JACKSON, M.Sc., F.G.S.,
C. L. WALTON, M.Sc., Ph.D.,
F. E. WEISS, D.Sc., F.R.S.,
A. WILSON, F.L.S., F.R.Met.S.

COMMUNICATIONS TO

Editorial: A. A. Dallman, F.C.S., A.L.S., 12 Tickhill Road, Doncaster.
Business: T. Buncle & Co., Market Place, Arbroath.

Annual Subscription 7s. 6d. Single Copies, 2s.

Arbroath: T. BUNCLE & Co., Market Place.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

The price of the Magazine is 15/- per annum to Subscribers and 2/- a part of 24 pages for single copies.

PRICES FOR BACK NUMBERS AND VOLUMES.

1ST SERIES, 1864—1889.—Vols. 1 to 25. These can be obtained in many cases in complete Volumes. Many of the single parts can also be supplied separately. Particulars on application to the Publishers.

2ND SERIES, 1890—1914.—Part 284, **5/-** each; Parts 237, 241, 249, 261, 262 and 294, **4/-** each. Remaining Parts, **3/6** each. Volumes, **25/-** net each, bound, **4/-** extra.

3RD SERIES, 1915—1938.—Part 610, **12/6** each; 786, 788, 792, 795, 798, 800, 803, 807, **6/-** each; 751, **5/-** each; 628, 791, 793, 856, **4/-** each; 784, **3/-** each. Remaining Parts, **2/6** each. Volumes, **23/6** net each, bound, **4/-** extra.

SUBSCRIPTION FOR 1939 (*payable in advance*), **15/-** *net, post free.*

Cloth cases for binding the 1938 Volume can be supplied at **2/-** net, post free.

All applications for the above should be made to—

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

Also obtainable at Messrs. GURNEY & JACKSON, 98 Great Russell Street, W.C.1.

CONTENTS.

PAGE
Notes on British Collembola (*continued*).—*R. S. Bagnall, D.Sc.* 97
The Aquatic Coleoptera of the Environs of Pannal Ash, near Harrogate. Part II.—*R. R. U. Kaufman* 102
Notes on Syrphidae (Diptera). III (*with figures*).—*J. E. Collin, F.R.E.S., etc.* 104
Four new Genera of British Sawflies (Hym., Symphyta) (*with figures*).—*R. B. Benson, M.A., F.R.E.S.* 110
Gronops lunatus L. ab. seminiger All. (Col. Curculionidae) in Sussex.—*F. B. Jennings* 113
The occurrence of Tribolium destructor Uytt. in Seeds in England.—*C. Potter, Ph.D., D.I.C.* 114
Cryptopleurum crenatum Panz. (Col., Palpicornia, Sphaeridiinae): new to the British List.—*K. M. Guichard* 115
Cryptopleurum minutum Fab. and C. crenatum Panz. (Col., Palpicornia, Sphaeridiinae) (*with figures*).—*C. E. Tottenham, M.A., F.R.E.S.* 117
Streblocera fulviceps Westw. (Hym., Braconidae) in Dumfriesshire.—*J. Murray* 119
Pionosomus varius Wolff. and Odontoscelis sp. (Hem., Heteropt.) in Pembrokeshire.—*H. W. Daltry, F.R.E.S.* 119
REVIEWS.—'An Ecological Glossary,' by J. R. Carpenter 119
'Anales de la Escuela Nacional de Ciencias Biologicas' 119
The Mallophaga (Biting-lice) recorded from the Pacific Islands (*continued*).—*G. B. Thompson* 120

AUTHORS are requested to send their communications and proofs to DR. B. M. HOBBY, 7 Thorncliffe Road, Oxford.

COUNTY BOROUGH OF HUDDERSFIELD.

TOLSON MEMORIAL MUSEUM, RAVENSKNOWLE, HUDDERSFIELD

APPOINTMENT OF ASSISTANT CURATOR.

Applications are invited for the appointment of Assistant Curator of the above Museum. Candidates must have had practical experience in zoology and in the maintenance and care of entomological collections.

The salary will be £210 per annum, rising by annual increments of £10 to £250 per annum, subject to satisfactory service.

The appointment will be subject to the provisions of the Local Government and Other Officers' Superannuation Act 1922.

Applications, which should be in writing and accompanied by copies of not more than three recent testimonials, endorsed 'Assistant Curator,' must be sent to the undersigned not later than Saturday, 13th May 1939.

Canvassing will disqualify. SAMUEL PROCTER,
Town Hall, Huddersfield. *Town Clerk.*
May 1939.

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY for the NORTH OF ENGLAND.

EDITED BY

W. H. PEARSALL, D.Sc., F.L.S., AND **W. R. GRIST, B.Sc.,** The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Prof. A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1875, and is circulated widely among the principal Naturalists of the country.

LONDON. A. BROWN AND SONS, LIMITED, 4 FARRINGDON AVENUE, E.C.4.
And at Hull.

PRICE 1/6 NETT. Prepaid Subscription 15/- per annum, post free.

Now Ready.

A PRELIMINARY LIST OF THE COLEOPTERA OF WINDSOR FOREST

By HORACE ST. J. K. DONISTHORPE, F.Z.S., F.R.E.S.

(*Reprinted from the 'Entomologists' Monthly Magazine'*)

A Record of 1870 species (more than half the British List) giving details of time, place and method of capture.

'A valuable landmark in the history of British Coleopterous Work.'—J. J. WALKER.

Cloth Bound. *Price* ***6s. 6d.*** *Packing and Postage 4d. extra.*

Nathaniel Lloyd & Co., Ltd., Burrell St. Works, Blackfriars, London. S.E.1.

THE NORTH WESTERN NATURALIST.

A Scientific and Educational Journal (published quarterly)

Especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, F.C.S., A.L.S.

In Collaboration with H. BRITTEN, F.R.E.S.

Rev. G. H. CARPENTER, D.Sc.,
W. E. COLLINGE, D.Sc., F.S.A.,
R. H. CORSTORPHINE, B.Sc.,
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.,
J. W. JACKSON, M.Sc., F.G.S.,
C. L. WALTON, M.Sc., Ph.D.,
F. E. WEISS, D.Sc., F.R.S.,
A. WILSON, F.L.S., F.R.Met.S.

COMMUNICATIONS TO

Editorial: A. A. Dallman, F.C.S., A.L.S., 12 Tickhill Road, Doncaster.
Business: T. Buncle & Co., Market Place, Arbroath.

Annual Subscription 7s. 6d. Single Copies, 2s.

Arbroath: T. BUNCLE & CO., Market Place.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

The price of the Magazine is 15/- per annum to Subscribers and 2/- a part of 24 pages for single copies.

PRICES FOR BACK NUMBERS AND VOLUMES.

1ST SERIES, 1864—1889.—Vols. 1 to 25. These can be obtained in many cases in complete Volumes. Many of the single parts can also be supplied separately. Particulars on application to the Publishers.

2ND SERIES, 1890—1914.—Part 284, **5/-** each; Parts 237, 241, 249, 261, 262 and 294, **4/-** each. Remaining Parts, **3/6** each. Volumes, **25/-** net each, bound, **4/-** extra.

3RD SERIES, 1915—1938.—Part 610, **12/6** each; 786, 788, 792, 795, 798, 800, 803, 807, **6/-** each; 751, **5/-** each; 628, 791, 793, 856, **4/-** each; 784, **3/-** each. Remaining Parts, **2/6** each. Volumes, **23/6** net each, bound, **4/-** extra.

SUBSCRIPTION FOR 1939 (*payable in advance*), **15/-** *net, post free.*

Cloth cases for binding the 1938 Volume can be supplied at **2/-** net, post free.

All applications for the above should be made to—

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

Also obtainable at Messrs. GURNEY & JACKSON, 98 Great Russell Street, W.C.1.

CONTENTS.

PAGE

The Mallophaga (Biting-lice) recorded from the Pacific Islands (*continued*).—*G. B. Thompson* 121

A Preliminary List of Irish Fleas.—*E. O'Mahony* 124

Deronectes griseostriatus De G. and Hygrobia tarda Herbst. (Col.) from the same Irish locality.—*Rev. E. J. Pearce, M.A., F.R.E.S.* 126

Hydrovatus clypealis Sharp (Col., Dytiscidae) in Sussex.—*C. J. Saunders* 126

Early Dragon-flies.—*F. H. Haines, M.R.C.S., L.R.C.P.* 126

Some new species of Staphylinidae (Col.).—*C. E. Tottenham, M.A., F.R.E.S.* 127

A new species of Meteorus (Hym., Braconidae) in Bricket Wood, Hertfordshire.—*R. B. Benson, M.A., F.L.S., F.R.E.S.* 131

Macropterus forms of Acalypta nigrina Fall. and A. marginata Wolff (Hem., Tingidae).—*E. C. Bedwell* 132

The Aculeate Hymenoptera of Hampstead Heath: An Appeal.—*I. H. H. Yarrow, M.A., F.R.E.S.* 132

REVIEWS.—'A Key to the British Species of Corixidae,' by T. T. Macan 132
'The Macrolepidoptera of the World,' ed. by A. Seitz 133
'The House-fly as a Danger to Health,' 4th ed. revised by J. Smart 133

SOCIETY.—Entomological Club 133

On various new or little-known British Diptera, including several species bred from the nests of birds and mammals (*with figures*).—*J. E. Collin, F.R.E.S., etc.* 134

Sale 964 Butterflies and 8055 Moths (British) contained in two Mahogany Cabinets comprising sixty drawers. Collection of the late E. C. Eggleton, Naturalist, Glasgow Art Galleries and Museum. Offers to E. C. Eggleton, 14 Nottingham Avenue, Glasgow, W.2.

AUTHORS are requested to send their communications and proofs to
DR. B. M. HOBBY, 7 Thorncliffe Road, Oxford.

Subscriptions for 1939, which are payable in advance, should be remitted as soon as possible to

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY for the NORTH OF ENGLAND.

EDITED BY

W. H. PEARSALL, D.Sc., F.L.S., AND **W. R. GRIST, B.Sc.,** The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Prof. A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1875, and is circulated widely among the principal Naturalists of the country.

LONDON. A. BROWN AND SONS, LIMITED, 4 FARRINGDON AVENUE, E.C.4.
And at Hull.

PRICE 1/6 NETT. Prepaid Subscription 15/- per annum, post free.

Now Ready.

A PRELIMINARY LIST OF THE COLEOPTERA OF WINDSOR FOREST

By HORACE ST. J. K. DONISTHORPE, F.Z.S., F.R.E.S.

(Reprinted from the 'Entomologists' Monthly Magazine')

A Record of 1870 species (more than half the British List) giving details of time, place and method of capture.

'A valuable landmark in the history of British Coleopterous Work.'—J. J. WALKER.

Cloth Bound. *Price* **6s. 6d.** *Packing and Postage 4d. extra.*

Nathaniel Lloyd & Co., Ltd., Burrell St. Works, Blackfriars, London. S.E.1.

THE NORTH WESTERN NATURALIST.

A Scientific and Educational Journal (published quarterly)

Especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, F.C.S., A.L.S.
In Collaboration with H. BRITTEN, F.R.E.S.

Rev. G. H. CARPENTER, D.Sc.,
W. E. COLLINGE, D.Sc., F.S.A.,
R. H. CORSTORPHINE, B.Sc.,
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.,
J. W. JACKSON, M.Sc., F.G.S.,
C. L. WALTON, M.Sc., Ph.D.,
F. E. WEISS, D.Sc., F.R.S.,
A. WILSON, F.L.S., F.R.Met.S.

COMMUNICATIONS TO

Editorial: A. A. Dallman, F.C.S., A.L.S., 12 Tickhill Road, Doncaster.
Business: T. Buncle & Co., Market Place, Arbroath.

Annual Subscription 7s. 6d. Single Copies, 2s.

Arbroath: T. BUNCLE & Co., Market Place.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

The price of the Magazine is 15/- per annum to Subscribers and 2/- a part of 24 pages for single copies.

PRICES FOR BACK NUMBERS AND VOLUMES.

1ST SERIES, 1864—1889.—Vols. 1 to 25. These can be obtained in many cases in complete Volumes. Many of the single parts can also be supplied separately. Particulars on application to the Publishers.

2ND SERIES, 1890—1914.—Part 284, **5/-** each; Parts 237, 241, 249, 261, 262 and 294, **4/-** each. Remaining Parts, **3/6** each. Volumes, **25/-** net each, bound, **4/-** extra.

3RD SERIES, 1915—1938.—Part 610, **12/6** each; 786, 788, 792, 795, 798, 800, 803, 807, **6/-** each; 751, **5/-** each; 628, 791, 793, 856, **4/-** each; 784, **3/-** each. Remaining Parts, **2/6** each. Volumes, **23/6** net each, bound, **4/-** extra.

SUBSCRIPTION FOR 1939 (*payable in advance*), **15/-** *net, post free.*

Cloth cases for binding the 1938 Volume can be supplied at **2/-** net, post free.
All applications for the above should be made to—

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

Also obtainable at Messrs. GURNEY & JACKSON, 98 Great Russell Street, W.C.1.

CONTENTS.

PAGE

On various new or little-known British Diptera, including several species bred from the nests of birds and mammals (*with figure*) (*concluded*).—*J. E. Collin, F.R.E.S., etc.* 145

Aphis and ant populations at Garforth (Yorkshire) during 1937 (*with figure*).—*W. Pickles* 155

Typhlomyrmex richardsi (Hym., Formicidae), a new species of Ponerine ant from British Guiana.—*H. Donisthorpe, F.Z.S., F.R.E.S., etc.* 161

New species of Asiatic Staphylinidae (Col.).—*M. Cameron, M.B., R.N., F.R.E.S.* 162

Proctotrupinae in Dumfriesshire.—*J. Murray* 163

Pyropterus affinis Payk. (Col. Lycidae) and its larva.—*E. G. Bayford* 164

REVIEWS.—'A Preliminary List of the Coleoptera of Windsor Forest,' by H. St. J. Donisthorpe 164

'North Western Naturalist' 164

'Butterflies and Moths of the Wayside and Woodland,' by W. J. Stokoe 165

'Faunistischer Führer Durch die Coleopteren-Literature,' by S. Schenkling 165

'Ergebnisse der Insektenbiologie,' by H. v. Lengerken 165

Lebia crux-minor L. (Col., Carabidae): a correction.—*W. J. Saunders* 165

Some new species of Staphylinidae (Col.) (*continued*).—*C. E. Tottenham, M.A., F.R.E.S.* 166

AUTHORS are requested to send their communications and proofs to DR. B. M. HOBBY, 7 Thorncliffe Road, Oxford.

Subscriptions for 1939, which are payable in advance, should be remitted as soon as possible to

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY for the NORTH OF ENGLAND.

EDITED BY

W. H. PEARSALL, D.Sc., F.L.S., AND **W. R. GRIST, B.Sc.,** The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Prof. A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1875, and is circulated widely among the principal Naturalists of the country.

LONDON. A. BROWN AND SONS, LIMITED, 4 FARRINGDON AVENUE, E.C.4.
And at Hull.

PRICE 1/6 NETT. Prepaid Subscription 15/- per annum, post free.

Now Ready.

A PRELIMINARY LIST OF THE COLEOPTERA OF WINDSOR FOREST

By HORACE ST. J. K. DONISTHORPE, F.Z.S., F.R.E.S.

(*Reprinted from the 'Entomologists' Monthly Magazine'*)

A Record of 1870 species (more than half the British List) giving details of time, place and method of capture.

'A valuable landmark in the history of British Coleopterous Work.'—J. J. WALKER.

Cloth Bound. *Price **6s. 6d.*** *Packing and Postage 4d. extra.*

Nathaniel Lloyd & Co., Ltd., Burrell St. Works, Blackfriars, London. S.E.1.

THE NORTH WESTERN NATURALIST.

A Scientific and Educational Journal (published quarterly)

Especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, F.C.S., A.L.S.
In Collaboration with H. BRITTEN, F.R.E.S.

Rev. G. H. CARPENTER, D.Sc.,
W. E. COLLINGE, D.Sc., F.S.A.,
R. H. CORSTORPHINE, B.Sc.,
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.,
J. W. JACKSON, M.Sc., F.G.S.,
C. L. WALTON, M.Sc., Ph.D.,
F. E. WEISS, D.Sc., F.R.S.,
A. WILSON, F.L.S., F.R.Met.S.

COMMUNICATIONS TO

Editorial: A. A. Dallman, F.C.S., A.L.S., 12 Tickhill Road, Doncaster.
Business: T. Buncle & Co., Market Place, Arbroath.

Annual Subscription 7s. 6d. Single Copies, 2s.

Arbroath: T. BUNCLE & Co., Market Place.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

The price of the Magazine is 15/- per annum to Subscribers and 2/- a part of 24 pages for single copies.

PRICES FOR BACK NUMBERS AND VOLUMES.

1ST SERIES, 1864—1889.—Vols. 1 to 25. These can be obtained in many cases in complete Volumes. Many of the single parts can also be supplied separately. Particulars on application to the Publishers.

2ND SERIES, 1890—1914.—Part 284, **5/-** each; Parts 237, 241, 249, 261, 262 and 294, **4/-** each. Remaining Parts, **3/6** each. Volumes, **25/-** net each, bound, **4/-** extra.

3RD SERIES, 1915—1938.—Part 610, **12/6** each; 786, 788, 792, 795, 798, 800, 803, 807, **6/-** each; 751, **5/-** each; 628, 791, 793, 856, **4/-** each; 784, **3/-** each. Remaining Parts, **2/6** each. Volumes, **23/6** net each, bound, **4/-** extra.

SUBSCRIPTION FOR 1939 (*payable in advance*), **15/-** *net, post free.*

Cloth cases for binding the 1938 Volume can be supplied at **2/-** net, post free. All applications for the above should be made to—

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

Also obtainable at Messrs. GURNEY & JACKSON, 98 Great Russell Street, W.C.1.

CONTENTS.

PAGE
Some new species of Staphylinidae (Col.) (*with figs.*) (*concluded*).—*C. E. Tottenham, M.A., F.R.E.S.* 169
Polygonia c-album L. (Lep.) in Hampshire.—*F. H. Haines, M.R.C.S., L.R.C.P.* 174
Odontaeus armiger Scop. (Col., Scarabaeidae) in Hants.—*B. M. Hobby, M.A., D.Phil.* 174
Colonisation of new areas by water-beetles.—*L. W. Grensted, M.A., D.D.* 174
Bruchus loti Payk. (Col.) and its aberrations.—*H. Donisthorpe, F.Z.S., F.R.E.S.* 176
Further notes on Pyropterus affinis Payk. (Col., Lycidae).—*E. G. Bayford* 178
Tortrix viridana L. (Lep.) in the New Forest.—*F. H. Haines* 178
Notes on American Elmidae with descriptions of new species (Coleoptera) (*with figs.*).—*H. E. Hinton, Ph.D.* 179
Sphinx pinastri L. (Lep.) in Hampshire.—*F. H. Haines* 185
Vanessa cardui L. (Lep.) in Hampshire.—*F. H. Haines* 185
SOCIETY.—Entomological Club 186
REVIEWS.—'Nomenclator Zoologicus,' ed. by S. A. Neave 186
'An Introduction to Modern Genetics,' by C. H. Waddington 187
'A Contribution to the Biology of North American Vespine Wasps,' by C. D. Duncan 187
EDITORIAL 187
Note on Anthrenocerus australis Hope (Col., Dermestidae).—*R. Howe, B.Sc., A.R.C.S.* 187
Notes on British Collembola.—*R. S. Bagnall, D.Sc.* 188

AUTHORS are requested to send their communications and proofs to
DR. B. M. HOBBY, 7 Thorncliffe Road, Oxford.

Subscriptions for 1939, which are payable in advance, should be remitted as soon as possible to

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

THE NATURALIST:
A MONTHLY ILLUSTRATED JOURNAL OF
NATURAL HISTORY for the NORTH OF ENGLAND.
EDITED BY
W. H. PEARSALL, D.Sc., F.L.S., AND **W. R. GRIST, B.Sc.,** The University, Leeds.
with the assistance as referees in special departments of
H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Prof. A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.
The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1875, and is circulated widely among the principal Naturalists of the country.
LONDON. A. BROWN AND SONS, LIMITED, 4 FARRINGDON AVENUE, E.C.4.
And at Hull.
PRICE 1/6 NETT. Prepaid Subscription 15/- per annum, post free.

Now Ready.

A PRELIMINARY LIST OF THE COLEOPTERA OF WINDSOR FOREST

By HORACE ST. J. K. DONISTHORPE, F.Z.S., F.R.E.S.

(Reprinted from the 'Entomologist's Monthly Magazine')

A Record of 1870 species (more than half the British List) giving details of time, place and method of capture.

'A valuable landmark in the history of British Coleopterous Work.'—J. J. WALKER.

Cloth Bound. *Price* ***6s. 6d.*** *Packing and Postage 4d. extra.*

Nathaniel Lloyd & Co., Ltd., Burrell St. Works, Blackfriars, London. S.E.1

THE NORTH WESTERN NATURALIST.

A Scientific and Educational Journal (published quarterly)

Especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, F.C.S., A.L.S.
In Collaboration with H. BRITTEN, F.R.E.S.

Rev. G. H. CARPENTER, D.Sc.,
W. E. COLLINGE, D.Sc., F.S.A.,
R. H. CORSTORPHINE, B.Sc.,
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.,
J. W. JACKSON, M.Sc., F.G.S.,
C. L. WALTON, M.Sc., Ph.D.,
F. E. WEISS, D.Sc., F.R.S.,
A. WILSON, F.L.S., F.R.Met.S.

COMMUNICATIONS TO

Editorial: A. A. Dallman, F.C.S., A.L.S., 12 Tickhill Road, Doncaster.
Business: T. Buncle & Co., Market Place, Arbroath.

Annual Subscription 7s. 6d. Single Copies, 2s.

Arbroath: T. BUNCLE & Co., Market Place.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

The price of the Magazine is 15/- per annum to Subscribers and 2/- a part of 24 pages for single copies.

PRICES FOR BACK NUMBERS AND VOLUMES.

1ST SERIES, 1864—1889.—Vols. 1 to 25. These can be obtained in many cases in complete Volumes. Many of the single parts can also be supplied separately. Particulars on application to the Publishers.

2ND SERIES, 1890—1914.—Part 284, **5/-** each; Parts 237, 241, 249, 261, 262 and 294, **4/-** each. Remaining Parts, **3/6** each. Volumes, **25/-** net each, bound, **4/-** extra.

3RD SERIES, 1915—1938.—Part 610, **12/6** each; 786, 788, 792, 795, 798, 800, 803, 807, **6/-** each; 751, **5/-** each; 628, 791, 793, 856, **4/-** each; 784, **3/-** each. Remaining Parts, **2/6** each. Volumes, **23/6** net each, bound, **4/-** extra.

SUBSCRIPTION FOR 1939 *(payable in advance)*, **15/-** *net, post free.*

Cloth cases for binding the 1938 Volume can be supplied at **2/-** net, post free. All applications for the above should be made to—

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

Also obtainable at Messrs. GURNEY & JACKSON, 98 Great Russell Street, W.C.1.

CONTENTS.

PAGE
Notes on British Collembola (*concluded*).—*R. S. Bagnall, D.Sc.* 193
A species of Philonthus (Col., Staphylinidae) new to the British Islands and two new varieties.—*Rev. C. E. Tottenham, M.A., F.R.E.S.* 201
On the country of origin of Cis bilamellatus Fowler.—*K. G. Blair, D.Sc., F.R.E.S.* 202
Aglais urticae L. (Lep., Nymphalidae) taken by blackbird.—*F. H. Haines, M.R.C.S., L.R.C.P.* 202
Cossonus linearis (Col., Curculionidae), a species of Coleoptera new to Britain.—*H. Donisthorpe, F.Z.S., F.R.E.S.* 203
Obituaries.—Alfred Ernest Tonge 203
Walther Horn 204
Societies.—Entomological Club 206
South London Entomological and Natural History Society 206
Reviews.—'The Insect Legion,' by M. Burr 207
'The Principles of Insect Physiology,' by V. B. Wigglesworth 207
'Faunistischer Führer durch die Coleopteren-Literatur,' by S. Schenkling 207
'Catalogue Colopterum Daniae et Fennoscandiae,' ed. by W. Hellen 208
Colonisation by water-beetles.—*Rev. E. J. Pearce, M.A., F.R.E.S.* 203
Campylomma verbasci Mey.-D. (Hem., Capsidae) at Heston, Middlesex. —*H. Donisthorpe* 208
Obrium brunneum Fab. (Col., Longicornia) in Dorset and Sussex.—*P. Harwood and L. G. Cox* 208
Obrium brunneum Fab. (Col., Longicornia) in Sussex.—*C. J. Saunders* 208
The Mallophaga (Biting-lice) recorded from the Pacific Islands (*continued*). —*G. B. Thompson* 209

AUTHORS are requested to send their communications and proofs to
Dr. B. M. Hobby, 7 Thorncliffe Road, Oxford.

Subscriptions for 1939, which are payable in advance, should be remitted as soon as possible to

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

THE NATURALIST:
A MONTHLY ILLUSTRATED JOURNAL OF
NATURAL HISTORY for the NORTH OF ENGLAND.
EDITED BY
W. H. PEARSALL, D.Sc., F.L.S., AND **W. R. GRIST, B.Sc.,** The University, Leeds.
with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Prof. A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1875, and is circulated widely among the principal Naturalists of the country.

London. A. Brown and Sons, Limited, 4 Farringdon Avenue, E.C.4.
And at Hull.
PRICE 1/6 NETT. Prepaid Subscription 15/- per annum, post free.

Now Ready.

A PRELIMINARY LIST OF THE COLEOPTERA OF WINDSOR FOREST

By HORACE ST. J. K. DONISTHORPE, F.Z.S., F.R.E.S.

(*Reprinted from the 'Entomologist's Monthly Magazine'*)

A Record of 1870 species (more than half the British List) giving details of time, place and method of capture.

'A valuable landmark in the history of British Coleopterous Work.'—J. J. WALKER.

Cloth Bound. *Price* **6s. 6d.** *Packing and Postage 4d. extra.*

Nathaniel Lloyd & Co., Ltd., Burrell St. Works, Blackfriars, London. S.E.1

THE NORTH WESTERN NATURALIST.

A Scientific and Educational Journal (published quarterly)

Especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, F.C.S., A.L.S.
In Collaboration with H. BRITTEN, F.R.E.S.

REV. G. H. CARPENTER, D.Sc.,
W. E. COLLINGE, D.Sc., F.S.A.,
R. H. CORSTORPHINE, B.Sc.,
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.,
J. W. JACKSON, M.Sc., F.G.S.,
C. L. WALTON, M.Sc., Ph.D.,
F. E. WEISS, D.Sc., F.R.S.,
A. WILSON, F.L.S., F.R.Met.S.

COMMUNICATIONS TO

Editorial: A. A. Dallman, F.C.S., A.L.S., 12 Tickhill Road, Doncaster.
Business: T. Buncle & Co., Market Place, Arbroath.

Annual Subscription 7s. 6d. Single Copies, 2s.

Arbroath: T. BUNCLE & Co., Market Place.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

The price of the Magazine is 15/- per annum to Subscribers and 2/- a part of 24 pages for single copies.

PRICES FOR BACK NUMBERS AND VOLUMES.

1ST SERIES, 1864—1889.—Vols. 1 to 25. These can be obtained in many cases in complete Volumes. Many of the single parts can also be supplied separately. Particulars on application to the Publishers.

2ND SERIES, 1890—1914.—Part 284, **5/-** each; Parts 237, 241, 249, 261, 262 and 294, **4/-** each. Remaining Parts, **3/6** each. Volumes, **25/-** net each, bound, **4/-** extra.

3RD SERIES, 1915—1938.—Part 610, **12/6** each; 786, 788, 792, 795, 798, 800, 803, 807, **6/-** each; 751, **5/-** each; 628, 791, 793, 856, **4/-** each; 784, **3/-** each. Remaining Parts, **2/6** each. Volumes, **23/6** net each, bound, **4/-** extra.

SUBSCRIPTION FOR 1939 (*payable in advance*), **15/-** *net, post free.*

Cloth cases for binding the 1938 Volume can be supplied at **2/-** net, post free. All applications for the above should be made to—

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

Also obtainable at Messrs. GURNEY & JACKSON, 98 Great Russell Street, W.C.1.

CONTENTS.

PAGE
The Mallophaga (Biting-lice) recorded from the Pacific Islands (*concluded*). —*G. B. Thompson* 217
Philonthus explanipes nom. nov. (Col., Staphylinidae) (*with figs.*).—*Rev. C. E. Tottenham, M.A., F.R.E.S.* 218
Gnypeta rubrior n.sp.: a Staphylinid beetle new to Science.—*C. E. Tottenham* 220
Some new species of Xantholinini (Col., Staphylinidae).—*C. E. Tottenham* 221
Description of the female Xylota xanthocnema Collin (Dipt., Syrphidae). —*R. L. Coe* 224
A second British record of Rhingia rostrata Linnaeus (Dipt., Syrphidae): its distinctions from R. campestris Meigen (*with figs.*).—*R. L. Coe* 225
A Note on Pimpla oculatoria Fab. (Hym., Ichneumonidae).—*K. G. Blair, D.Sc., F.R.E.S.* 227
On some new and little known South American Neoelmis Musgrave (Coleoptera, Elmidae) (*with figs.*).—*H. E. Hinton, Ph.D.* 228
Diptera on the summit of Snowdon, Carnarvonshire.—*Prof. L. W. Grensted, D.D., F.R.E.S.* 234
Ithytrichia clavata Morton (Trich., Hydroptilidae) new to Britain.—*L. W. Grensted* 235
The Belgian Congo species of the genus Dicrana Burr (Dermaptera: Pygidicranidae).—*W. D. Hincks, M.P.S., F.R.E.S.* 236
Extension of Range of the Water Beetle, Hygrobia tarda Herbst. (Col., Hygrobiidae).—*G. B. Walsh* 239
REVIEW.—'The World of Insects,' by C. D. Duncan and G. Pickwell 240
Rhopalum clavipes L. (Hym., Crabronidae) nidificating in old gall of Saperda populnea L. (Col., Cerambycidae).—*K. G. Blair* 240
Killing Insects with Sulphur.—*F. H. Haines, M.R.C.S., L.R.C.P.* 240

AUTHORS are requested to send their communications and proofs to
DR. B. M. HOBBY, 7 Thorncliffe Road, Oxford.

Subscriptions for 1939, which are payable in advance, should be remitted as soon as possible to

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

THE NATURALIST:
A MONTHLY ILLUSTRATED JOURNAL OF
NATURAL HISTORY for the NORTH OF ENGLAND.
EDITED BY
W. H. PEARSALL, D.Sc., F.L.S., AND **W. R. GRIST, B.Sc.,** The University, Leeds.
with the assistance as referees in special departments of
H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Prof. A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.
The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1875, and is circulated widely among the principal Naturalists of the country.
LONDON. A. BROWN AND SONS, LIMITED, 4 FARRINGDON AVENUE, E.C.4.
And at Hull.
PRICE 1/6 NETT. Prepaid Subscription 15/- per annum, post free.

Now Ready.

A PRELIMINARY LIST OF THE COLEOPTERA OF WINDSOR FOREST

By HORACE ST. J. K. DONISTHORPE, F.Z.S., F.R.E.S.

(Reprinted from the 'Entomologist's Monthly Magazine')

A Record of 1870 species (more than half the British List) giving details of time, place and method of capture.

'A valuable landmark in the history of British Coleopterous Work.'—J. J. WALKER.

Cloth Bound. *Price* ***6s. 6d.*** *Packing and Postage 4d. extra.*

Nathaniel Lloyd & Co., Ltd., Burrell St. Works, Blackfriars, London. S.E.1

THE NORTH WESTERN NATURALIST.

A Scientific and Educational Journal (published quarterly)

Especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, F.C.S., A.L.S.
In Collaboration with H. BRITTEN, F.R.E.S.

Rev. G. H. CARPENTER, D.Sc.,
W. E. COLLINGE, D.Sc., F.S.A.,
R. H. CORSTORPHINE, B.Sc.,
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.,
J. W. JACKSON, M.Sc., F.G.S.,
C. L. WALTON, M.Sc., Ph.D.,
F. E. WEISS, D.Sc., F.R.S.,
A. WILSON, F.L.S., F.R.Met.S.

COMMUNICATIONS TO

Editorial: A. A. Dallman, F.C.S., A.L.S., 12 Tickhill Road, Doncaster.
Business: T. Buncle & Co., Market Place, Arbroath.

Annual Subscription 7s. 6d. Single Copies, 2s.

Arbroath: T. BUNCLE & Co., Market Place.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

The price of the Magazine is 15/- per annum to Subscribers and 2/- a part of 24 pages for single copies.

PRICES FOR BACK NUMBERS AND VOLUMES.

1ST SERIES, 1864—1889.—Vols. 1 to 25. These can be obtained in many cases in complete Volumes. Many of the single parts can also be supplied separately. Particulars on application to the Publishers.

2ND SERIES, 1890—1914.—Part 284, **5/-** each; Parts 237, 241, 249, 261, 262 and 294, **4/-** each. Remaining Parts, **3/6** each. Volumes, **25/-** net each, bound, **4/-** extra.

3RD SERIES, 1915—1938.—Part 610, **12/6** each; 786, 788, 792, 795, 798, 800, 803, 807, **6/-** each; 751, **5/-** each; 628, 791, 793, 856, **4/-** each; 784, **3/-** each. Remaining Parts, **2/6** each. Volumes, **23/6** net each, bound, **4/-** extra.

SUBSCRIPTION FOR 1939 (*payable in advance*), **15/-** *net, post free.*

Cloth cases for binding the 1938 Volume can be supplied at **2/-** net, post free.

All applications for the above should be made to—

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

Also obtainable at Messrs. GURNEY & JACKSON, 98 Great Russell Street, W.C.1.

CONTENTS.

PAGE

Additions to the list of British Crane-flies (*with figs.*).—*F. W. Edwards, M.A., Sc.D., F.R.S.* 241

Balaninus villosus F. (Col., Curculionidae) bred from a gall of Rhodites rosae L. (Hym., Cynipidae).—*K. G. Blair, D.Sc., F.R.E.S.* 249

Stenopelmus rufinasus Gyll. (Col., Curculionidae).—*G. H. Ashe* 249

A note on Scymnus minimus Rossi (Col., Coccinellidae).—*G. H. Ashe* 250

Migratory Lepidoptera in the Oxford district.—*R. F. Bretherton, M.A.* 250

Immigrant Lepidoptera in the Inner and Outer Hebrides during 1939.—*Prof. J. W. Heslop Harrison, D.Sc., F.R.S.* 252

Bombus hortorum L. (Hym.) at Sycamore flowers on the Isle of Coll.—*J. W. Heslop Harrison* 252

Chrysis ignita L. (Hym.) at the flowers of Tormentil. — *J. W. Heslop Harrison* 252

Depressaria nervosa Haw. and D. heracleana De Geer (Lep., Oecophoridae) in the Hebrides.—*J. W. Heslop Harrison* 253

Notes on Irish Siphonaptera. I.—*E. O'Mahony* 253

Stiphrolamyra comans sp.n., a new African Asilid (Diptera).—*B. M. Hobby, M.A., D.Phil., F.R.E.S.* 254

Notes on Rhingia rostrata L. (Dipt., Syrphidae).—*C. J. Wainwright* 255

Coleoptera in Dumfriesshire.—*J. Murray* 255

Abnormal abundance of the larvae of Pieris brassicae L. (Lep.) in South Devon.—*K. G. Blair* 256

Larvae of British beetles.—I. A key to the genera and most of the species of British Cerambycid larvae (*with figs.*).—*F. van Emden* 257

AUTHORS are requested to send their communications and proofs to
Dr. B. M. Hobby, 7 Thorncliffe Road, Oxford.

Subscriptions for 1939, which are payable in advance, should be remitted as soon as possible to

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY for the NORTH OF ENGLAND.

EDITED BY

W. H. PEARSALL, D.Sc., F.L.S., AND **W. R. GRIST, B.Sc.,** The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Prof. A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1875, and is circulated widely among the principal Naturalists of the country.

London. A. Brown and Sons, Limited, 4 Farringdon Avenue, E.C.4.
And at Hull.

PRICE 1/6 NETT. Prepaid Subscription 15/- per annum, post free

Now Ready.

A PRELIMINARY LIST OF THE COLEOPTERA OF WINDSOR FOREST

By HORACE ST. J. K. DONISTHORPE, F.Z.S., F.R.E.S.

(*Reprinted from the 'Entomologist's Monthly Magazine'*)

A Record of 1870 species (more than half the British List) giving details of time, place and method of capture.

'A valuable landmark in the history of British Coleopterous Work.'—J. J. WALKER.

*Cloth Bound. Price **6s. 6d.** Packing and Postage 4d. extra.*

Nathaniel Lloyd & Co., Ltd., Burrell St. Works, Blackfriars, London. S.E.1

THE NORTH WESTERN NATURALIST.

A Scientific and Educational Journal (published quarterly)

Especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, F.C.S., A.L.S.
In Collaboration with H. BRITTEN, F.R.E.S.

REV. G. H. CARPENTER, D.Sc.,	H. E. FORREST, F.L.S.,
W. E. COLLINGE, D.Sc., F.S.A.,	J. W. JACKSON, M.Sc., F.G.S.,
R. H. CORSTORPHINE, B.Sc.,	C. L. WALTON, M.Sc., Ph.D.,
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.	F. E. WEISS, D.Sc., F.R.S.,
	A. WILSON, F.L.S., F.R.Met.S.

COMMUNICATIONS TO

Editorial: A. A. Dallman, F.C.S., A.L.S., 12 Tickhill Road, Doncaster.
Business: T. Buncle & Co., Market Place, Arbroath.

Annual Subscription 7s. 6d. Single Copies, 2s.

Arbroath: T. BUNCLE & Co., Market Place.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

The price of the Magazine is 15/- per annum to Subscribers and 2/- a part of 24 pages for single copies.

PRICES FOR BACK NUMBERS AND VOLUMES.

1ST SERIES, 1864—1889.—Vols. 1 to 25. These can be obtained in many cases in complete Volumes. Many of the single parts can also be supplied separately. Particulars on application to the Publishers.

2ND SERIES, 1890—1914.—Part 284, **5/-** each; Parts 237, 241, 249, 261, 262 and 294, **4/-** each. Remaining Parts, **3/6** each. Volumes, **25/-** net each, bound, **4/-** extra.

3RD SERIES, 1915—1938.—Part 610, **12/6** each; 786, 788, 792, 795, 798, 800, 803, 807, **6/-** each; 751, **5/-** each; 628, 791, 793, 856, **4/-** each; 784, **3/-** each. Remaining Parts, **2/6** each. Volumes, **23/6** net each, bound, **4/-** extra.

SUBSCRIPTION FOR 1939 (*payable in advance*), **15/-** *net, post free.*

Cloth cases for binding the 1938 Volume can be supplied at 2/- net, post free.
All applications for the above should be made to—

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

Also obtainable at Messrs. GURNEY & JACKSON, 98 Great Russell Street, W.C.1.

CONTENTS.

PAGE

Larvae of British beetles.—I. A key to the genera and most of the species of British Cerambycid larvae (*with figs.*) (*continued*).—*F. van Emden* 265

A new Phyllophaga (Col., Scarabaeidae) from the Cayman Islands, B.W.I. (Results of the Oxford University Biological Expedition to the Cayman Islands, 1938 (*with figs.*).—*M. W. Sanderson* 274

Concerning the names of two British water-beetles. — *Prof. F. Balfour-Browne, M.A., F.R.S.E.* 276

Henestaris halophilus Burm., Nabis lineatus Dahlb. and Salda elegantula Fall. (Hemipt.) in Kent.—*A. M. Massee, D.Sc., F.R.E.S.* 277

Note on the record of Chrysopilus nubecula Fln. (Dipt.) as a British species.—*J. E. Collin, F.R.E.S.* 278

Abnormal abundance of the larvae of Pieris brassicae L. (Lep.). — *J. E. Campbell-Taylor, F.R.E.S.* 278

Strange behaviour of Astilbus (=Drusilla) canaliculatus F. (Col., Staphylinidae).—*A. H. Hamm, A.L.S., F.R.E.S.* 279

Cis bilamellatus Fowler (Col.) in Sherwood Forest. — *Prof. Sir Thomas Hudson Beare, LL.D., F.R.S.E.* 279

Acalypterae: A question of nomenclature. — *Prof. L. W. Grensted, D.D., F.R.E.S.* 280

Nycteribia biarticulata (Herm.) (Dipt.) in Somerset.—*E. O'Mahony* 280

SOCIETY.—Entomological Club 280

TITLE-PAGE, INDEX, ETC. .... i—xvi

AUTHORS are requested to send their communications and proofs to
DR. B. M. HOBBY, 7 Thorncliffe Road, Oxford.

Subscriptions for 1940, which are payable in advance, should be remitted as soon as possible to

**N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars,
London, S.E.1.**

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY for the NORTH OF ENGLAND.

EDITED BY

W. H. PEARSALL, D.Sc., F.L.S., AND **W. R. GRIST, B.Sc.,** The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Prof. A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1875, and is circulated widely among the principal Naturalists of the country.

LONDON. A. BROWN AND SONS, LIMITED, 4 FARRINGDON AVENUE, E.C.4.
And at Hull.

PRICE 1/6 NETT. Prepaid Subscription 15/- per annum, post free

Now Ready.

A PRELIMINARY LIST OF THE COLEOPTERA OF WINDSOR FOREST

By HORACE ST. J. K. DONISTHORPE, F.Z.S., F.R.E.S.

(*Reprinted from the 'Entomologist's Monthly Magazine.'*)

A Record of 1870 species (more than half the British List) giving details of time, place and method of capture.

'A valuable landmark in the history of British Coleopterous Work.'—J. J. WALKER.

Cloth Bound. *Price* ***6s. 6d.*** *Packing and Postage 4d. extra.*

Nathaniel Lloyd & Co., Ltd., Burrell St. Works, Blackfriars, London. S.E.1.

THE NORTH WESTERN NATURALIST.

A Scientific and Educational Journal (published quarterly)

Especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, F.C.S., A.L.S.
In Collaboration with H. BRITTEN, F.R.E.S.

REV. G. H. CARPENTER, D.Sc.,
W. E. COLLINGE, D.Sc., F.S.A.,
R. H. CORSTORPHINE, B.Sc.,
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.,
J. W. JACKSON, M.Sc., F.G.S.,
C. L. WALTON, M.Sc., Ph.D.,
F. E. WEISS, D.Sc., F.R.S.,
A. WILSON, F.L.S., F.R.Met.S.

COMMUNICATIONS TO

Editorial: A. A. Dallman, F.C.S., A.L.S., 12 Tickhill Road, Doncaster.
Business: T. Buncle & Co., Market Place, Arbroath.

Annual Subscription 7s. 6d. Single Copies, 2s.

Arbroath: T. BUNCLE & Co., Market Place.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

The price of the Magazine is 15/- per annum to Subscribers and 2/- a part of 24 pages for single copies.

PRICES FOR BACK NUMBERS AND VOLUMES.

1ST SERIES, 1864—1889.—Vols. 1 to 25. These can be obtained in many cases in complete Volumes. Many of the single parts can also be supplied separately. Particulars on application to the Publishers.

2ND SERIES, 1890—1914.—Part 284, **5/-** each; Parts 237, 241, 249, 261, 262 and 294, **4/-** each. Remaining Parts, **3/6** each. Volumes, **25/-** net each, bound, **4/-** extra.

3RD SERIES, 1915—1939.—Part 610, **12/6** each; 786, 788, 792, 795, 798, 800, 803, 807, **6/-** each; 751, **5/-** each; 628, 791, 793, 856, **4/-** each; 784, **3/-** each. Remaining Parts, **2/6** each. Volumes, **23/6** net each, bound, **4/-** extra.

SUBSCRIPTION FOR 1940 (*payable in advance*), **15/-** *net, post free.*

Cloth cases for binding the 1939 Volume can be supplied at **2/-** net, post free.

All applications for the above should be made to—

N. LLOYD & Co., Ltd., Burrell Street Works, Blackfriars, London, S.E.1.

Also obtainable at Messrs. GURNEY & JACKSON, 98 Great Russell Street, W.C.1.

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE

VOLUME LXXV
[THIRD SERIES, VOLUME XXV]

7-6-

CONTRIBUTION TO THE STUDY OF THE PALPICORNIA. II.

BY J. BALFOUR-BROWNE, M.A., F.Z.S., F.R.E.S.

Genus **Coeloctenus** novum.

Corpus ovatum, sat depressum, capite prothorace elytrisque punctatis, antennis novem-articulatis, elytris decemseriatis, striâ suturali antice abbreviatâ, metasterni areâ elevatâ distinctâ, fere duplo longiori quam latiori, abdominis segmento basali haud carinato, segmentis quatuor basalibus metatarsorum subaequalibus, unguiculis omnibus tridentatis, clavâ antennarum laxe articulatâ, alis reductis.

Genotype *C. seriatus* sp. nov.

This new genus in general facies resembles *Coelostoma,* but is immediately recognisable by the remarkable tarsal claws, similar in both sexes, which appear almost comb-like—hence the second part of the name, ctenus=a comb. The main ramus of the claw is long, very strongly curved and sharply pointed with a short, rather blunt, basal tooth and a longer, sharply pointed intermediate tooth (fig. 1*a*). The prosternum is ecarinate and not toothed on the

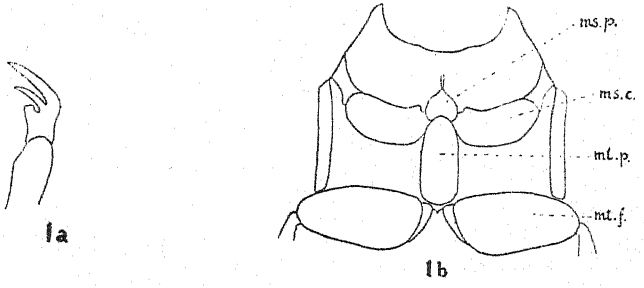


FIG. 1.—*Coeloctenus seriatus,* gen. et sp. nov.: (a) inner protarsal claw and apex of 5th sarsal segment; (*b*) meso- and metathorax, ventral view; *ms. p.*, mesosternal process; *ms. c.*, mesocoxal cavity; *mt. p.*, metasternal tabella; *mt. f.*, metafemur.

anterior margin; the mesosternum is in the form of an arrowhead, as in *Coelostoma*, but is broadly tectiform and not at all carinated longitudinally, the anterior projection blunt, the posterior edge emarginate for the reception of the rounded anterior apex of the metasternum, which forms an elongate tabella[1] with the sides sharply delimited from the rest of the metasternum. This metasternal tabella appears like the section of a cone, twice as long as wide, the anterior apex rounded, the sides at first sharply, then more gradually diverging and at about seven-eighths of the total length very sharply turning inwards to meet in an obtuse angle between the metacoxae (fig. 1*b*).

The basal abdominal segment has a short tectiform ridge basally which must represent the carina so widely present in this subfamily.

The intermediate femora are covered with a dense hydrofugal pubescence beneath except for the extreme apex and a narrow strip along the posterior margin. The four basal segments of the metatarsi are short and subequal, the fifth is long, almost as long as the first four taken together. All the segments of the three pairs of tarsi are provided with a single longitudinal line of long golden hairs on the dorsal surface. The flight-wings are reduced to mere functionless slips (cf. *Apator* [Col. *Dytiscidae*]).

Coelostenus seriatus sp. nov.

Corpus ovatum, sat depressum, nigrum, nitidum; capite anterius laevigato, post oculos tenuissime reticulato, leviter sat remote punctato, labro transverso, rufo-flavo; prothorace laevigato, tenuiter punctato, anterius et ad latera tenuiter marginato; elytris tenuiter punctatis, striâ suturali antice abbreviatâ usque ad medium attingente, seriebus decem punctorum majorum haud canaliculatis, internis plus minus antice abbreviatis. 3.87—4.54 mm. long.; 2.18—2.45 mm. lat.

Head throughout with fine scattered punctures apparently becoming slightly stronger towards the vertex, the latter finely reticulate to a line drawn between the posterior margins of the eyes. Frontal sutures effaced. Labrum transverse, anterior edge barely emarginate, reddish-yellow. Maxillary palpi short, reddish-yellow, the second joint slightly inflated, about as long as the fourth, the third only slightly shorter, the fourth joint with the apex transversely truncate. Antennae nine-jointed, with the basal six segments yellow, the club fuscous, loosely articulated, about as long as joints 1—6 together. Mentum fuscous, shining, unexcavated, with a few very fine scattered punctures, the anterior margin bisinuate.

Pronotum black, the sides obscurely reddish; punctation as on the frons, closer and more copious but not at all dense; intervals quite shining. Anterior angles rounded widely, posterior more clearly indicated; laterally clearly margined, the margin continued less clearly along the entire anterior edge.

Elytra shining, entirely black, punctured as the pronotum, the interstices quite shining. A sutural stria is present on each elytron from the middle to the apex. Towards the apex ten longitudinal series are distinguishable, composed of punctures about twice the size of the general punctation.

---

[1] The 'tabella' is the raised glabrous portion of the metasternum. The term is accepted among writers on this family.

Laterally these series can be identified right to the base, but the internal series become lost owing to a gradual reduction of the size of the punctures to that of the general punctation. The series are quite unincised, even posteriorly, so that the curve of the elytron is quite even from margin to suture.

TANGANYIKA TERRITORY: Lake Tanganyika, west shore, Kigoma, 30.ix.1926, 'under stones, shallow water, rocky shore,' holotype ♂, allotype ♀, and 25 paratypes; Kigoma, 24.ix.1926, 'among weeds in harbour,' 3 paratypes; Kirando, x.1926, 'from silt, blocked river mouth,' 1 paratype (all *C. Christy Exp*:).

The somewhat depressed form and the remarkable development of the claws suggests a species normally inhabiting either rapid turbulent streams or a shore subject to frequent sharp storms, such as the west shore of Lake Tanganyika provides. The reduction of the wings is a feature of great interest, conceivably correlated with the habitat, since reduced wings are less likely to impede the insect in the event of involuntary raising of the elytra in rough water.

Cercyon (s.str.) *atricapillum* (Marsh.).

Dermestes atricapillus Marsham, 1802, *Col. Brit.*: 72, No. 31.
Dermestes nigriceps Marsham, 1802, *loc. cit.*: 72, No. 34.
Dermestes laevis Marsham, 1802, *loc. cit.*: 73, No. 37.
Cercyon atriceps Stephens, 1829, *Ill. Brit. Ent. Mand.*, **ii**: 151.
Cercyon testaceum Stephens, 1829, *loc. cit.*: 152 (ex parte).
Cercyon vicinalis Walker, 1859, *Ann. Mag. nat. Hist.*, (3) **iii**: 258. (non auctt.).

C. atricapillum has priority of place publication over *C. nigriceps* and must therefore be the valid name of this world-wide species.

I have examined Walker's type of *C. vicinalis* and am able to state that the species has been misinterpreted. The type measures 1.73 mm. long and possesses the femoral ridges of the metasternum that are so characteristic of *C. atricapillum*, of which species Walker's type is a perfectly normal specimen.

Knisch[2] gives as synonyms of Walker's species, *C. nigriceps* Motschulsky 1863 (non Marsham) and *C. atriceps* G. & H. 1868 (non Stephens). The description of Motschulsky's species has nothing that is not quite compatible with *C. atricapillum* and the size is correct for that species, and in the absence of the type of Motschulsky I propose to treat this species as the same as *C. atricapillum* Marsham. The name proposed by Gemminger and

---

[2] Knisch, 1924, *Coleopt. Cat., Junk-Schenkling*, pars. 79 : 150.

Harold is itself a synonym of Stephens' species. It is clear, therefore that the *C. vicinalis* auctt., lacking, as it does, the femoral ridges, is unnamed and undescribed and for it I propose the name *Cercyon subsolanum* and append a preliminary diagnosis.

Cercyon (s. str.) **subsolanum** sp. nov.

Cercyon vicinalis auctt. (non Walker).

Elongato-ovalis, minus convexus, nitidus; capite atro, sat crebre fortiter punctato, antennis palpisque flavis, his clavâ fusco-brunneâ; pronoto elytrisque flavo-testaceis, illo sat crebre punctato, his tenuiter sed distincte novem-punctato-striatis, interstriis tenuius irregulariter punctulatis. Subtus mento ut longe ut latitudine, laevigato, sparse punctato; prosterno carinato; tabellâ metasternali parvâ, laevigatâ, sat sparse punctatâ, lateribus non antice continuatis. Long. 2.63—3.18 mm., lat. 1.27—1.54 mm.

SINGAPORE: Holotype ♂ (*C. J. Saunders*); 22.xi.—19.xii.1915, allotype ♀ (*Dr. M. Cameron*); and paratypes obtained by the same collectors. Further paratypes from: Assam, Patkai Mts. (*Doherty*); Siam, Renong (*Doherty*); Perak (*Doherty*); Nias I. (*German Mission*); Philippine Is., Isabéla (*Semper*); and 'Malay,' without further particulars (*Castelnau*).

Cercyon (s. str.) *vicinaloides* d'Orchymont.

Cercyon vicinalis var. *vicinaloides* d'Orchymont, 1925, *Ann. Soc. ent. Belg.*, LXV: 278.

I am of the opinion that this species, described as a variety of *C. vicinalis* auctt., is fully valid. It differs from *C. subsolanum* by its larger size, transverse mentum, which is more copiously punctate and transversely rugose, more copiously punctured metasternal tabella, rather more closely punctured pronotum and the elytral interstriae more finely and copiously punctured.

Cercyon (*Cerycon*) *triste* (Illiger).

Sphaeridium tristis Illiger, 1801, *Mag. Ins.*, **i**: 39.

Dermestes boletophagus Marsham, 1802, *Col. Brit.*: 72, No. 33.

Sphaeridium minutum Gyllenhal, 1808, *Ins. Suec.*, **i**: 110.

Cercyon convexium Stephens, 1829, *Ill. Brit. Ent. Mand.*, **ii**: 145, No. 32 (ex parte).

Cercyon convexior Stephens, 1829, *loc. cit.*: 146, No. 33 (ex parte).

Examination of Marsham's type of *D. boletophagus* surprisingly proved the species to belong to *Cercyon* and the form of the mesosternal lamella and metasternal tabella are of the type seen in the subgenus *Cerycon* Rey, which I consider to be a valid subgenus and whose characteristics I shall discuss in a forthcoming paper on the British Sphaeridiinae. No difficulty is encountered in transfering the species to its proper position since the name is antedated by Illiger's species.

Megasternum obscurum (Marsham).

Dermestes obscurus Marsham, 1802, *Col. Brit.*: 72, No. 32.
Dermestes concinnus Marsham, 1802, *loc. cit.*: 74, No. 40.
Dermestes ferrugineus Marsham, 1802, *loc. cit.*: 74, No. 41.
Dermestes stercorarius Marsham, 1802, *loc. cit.*: 76, No. 47.
Cercyon aquaticum Stephens, 1829, *Ill. Brit. Ent. Mand.*, **ii**: 138, No. 6 (ex parte).
Cercyon acutum Stephens, 1829, *loc. cit.*: 139, No. 9 (ex parte).
Cercyon bolitophagum Stephens, 1829, *loc. cit.*: 140, No. 11.
Cercyon immune Stephens, 1829, *loc. cit.*: 140, No. 12.
Cercyon convexior Stephens, 1829, *loc. cit.*: 146, No. 33.
Cercyon contaminatum Stephens, 1829, *loc. cit.*: 149, No. 44.
Cercyon immundum Stephens, 1829, *loc. cit.*: 150, No. 49 (ex parte).
Megasternum boletophagum auctt. (non Marsham 1802).

Knisch[3] gives *D. concinnus* Marsham as a synonym of *C. atricapillus* (Marsh.) but this is incorrect as I have been able to prove by examination of the type.

Examination of Marsham's type of *D. boletophagus* proves that this species has been misinterpreted by all later authors and that it is, as has been seen above, a specimen of *C.* (*Cerycon*) *triste* (Illig.). In any case *D. obscurus* has priority of place publication and accordingly the valid name of the species is *Megasternum obscurum* (Marsham).

Genus **Notohydrus** novum.[4]

Corpus oblongum, minus convexum; antennis octo-articulatis, segmento quinto minus cupuliforme; palpis brevibus, segmento quarto quam tertio distincte longiore; femoribus intermediis subtus dense pubescentibus (areâ apicali exceptâ), femoribus posterioribus areâ lineari anteriore subbasali dense pubescente; tibiis posticis rectis; tarsis posticis segmento ultimo quam quattuor praecedenti-

---

[3] Knisch, *loc cit.*: 142.

[4] From NOTOS = Southern, HYDRUS = Water-beetle.

bus simul sumptis distincte breviore; prosterno et metasterno inermibus, mesosterno areâ centrale leviter elevatâ et rotundatâ; abdomine subtus quinque-segmentato; elytris striâ suturali antice abbreviatâ.

Genotype: *Laccobius australis* Blackburn.

It appears that the genus *Laccobius* was misinterpreted by Blackburn since d'Orchymont[5] has shown that *Notoberosus zietzi* Blackburn, of which he has seen a cotype, is a *Laccobius* and examination of the types of *Laccobius australis* Blackb., and *Laccobius montanus* Blackb., has shown them to belong to a quite distinct genus. (Blackburn admitted that this treatment would be perhaps justified.)

The new genus is very difficult to place since there is no material for dissection. In form it is very similar to an *Helochares,* but the fifth antennal segment is barely cupuliform, nearly as is found in the *Cercyonini,* but by the third segment of the maxillary palpi clearly shorter than the fourth and the fifth metatarsal segment shorter than the four basal segments taken together, the genus belongs to the sub-tribe *Hydrobiae* of the subfamily Hydrophilinae, and until more material is available I suggest that the new genus should be placed at the end of this sub-tribe.

The antennae are 8-segmented (5 + 3), the clypeus is produced and almost flat, the anterior margin straight, the anterior angles rounded. The pronotum appears nearly transverse, but the anterior margin is very deeply emarginate for the reception of the head, so that the anterior angles appear to be much produced from a nearly transverse tergum. The systematic series of punctures of the head and pronotum are not present. The elytra have a sharply impressed sutural stria in the apical three-fifths. The prosternum is non-carinated, the portion in front of the anterior coxal cavities very narrow, almost linear; the mesosternum has a very weakly produced boss in front of the mesocoxal cavities, which are only very slightly separated; the metasternum is simple. There are five ventral abdominal sterna, the apical margin of the fifth simply rounded.

Neohydrophilus occidentalis sp. nov.

Elongatus, modice convexus, nitidus, aeneo-micans; capite pertenuissime vix visibiliter reticulato, sat dense punctulato, punctis majoribus interspersis, fronte antice emarginato, seriebus punctorum multo majorum antero-externo et inter-oculo, labro

---

[5] D'Orchymont, 1925, *Ann. Soc. Ent. Belg.*, LXV : 66.

transverso antice subsinuato, punctis duobus grandibus in medio; pronoto scutelloque ut in capite punctatis et reticulatis; elytris pertenuissime reticulatis, punctulis minutis remotis, seriebus punctorum quattuor, internis regularibus, externis magis irregularibus, impressis. Subtus rufoniger; antennis (clavâ exceptâ) et palpis rufo-flavis, pedibus rufo-piceis, his posticis praecipue tibiis magis infuscatis; carinâ prosternali antice rotundatâ, postice longe spinosâ; carinâ mesosternali parte antice fere perpendiculariter praeruptâ; carinâ metasternali postice spinâ breve; segmento ultimo abdominis areâ apicali glabrâ. 14.4—15.6 *mm. long.*

NIGERIA: Sherifuri, holotype ♂, allotype ♀, and 1 ♀ paratype (*Dr. Ll. Lloyd*).

This species comes very near *deplanatus* d'Orch. from East Africa, but may be easily recognised by the shorter spine of the metasternum, which does not pass the posterior margin of the first abdominal segment; by the more copious punctation of the head, pronotum and scutellum in which the finer punctures are rather more visible; the surface reticulation is rather more effaced, the degree of impression in the female being about the same as in the male of *deplanatus*.

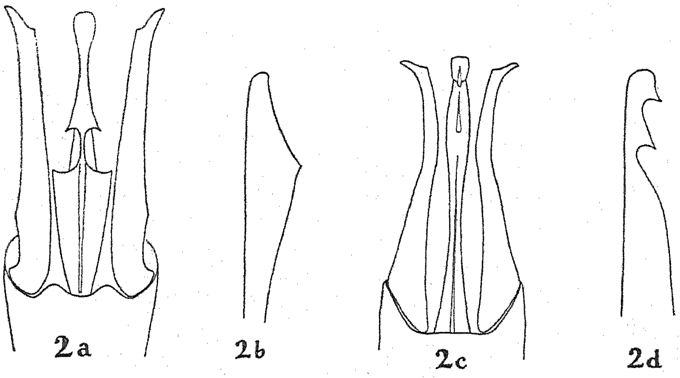


FIG. 2.—*Neohydrophilus deplanatus* d'Orch., aedeagus: (*a*) dorsal view; (*b*) apex of central lobe in lateral view. *Neohydrophilus occidentalis*, sp. n., aedeagus: (*c*) dorsal view; (*d*) apex of central lobe in lateral view.

The aedeagus is on the same plan in the two species, the lateral lobes (the parameres), are similar, the central lobe is quite distinct. In *deplanatus* (fig. 2*a*, *b*) the central lobe is widest basally on the ventral side, longitudinally grooved on the widest portion, then narrowed for a distance about equal to the wider part and then again expanded to the apex which is not or barely recurved dorsally. The dorsal side is strongly explanate basally as two wings separated by a wide shallow groove; the wings terminate abruptly and the explanate portion is replaced by a short longitudinal keel which is again suddenly explanated, from this sharp dilation to the apex the sides converge steadily.

In *occidentalis* (fig. 2*c*, *d*) the ventral edge of the central lobe is widest beyond the middle, tectiform, not at all grooved, followed by a short narrow portion before the apex again widens, the extreme apex being quite recurved dorsally. The dorsal edge is nowhere at all explanate, sharply keeled longitudinally; at about four-fifths of the length the keel is interrupted by a short, forward directed emargination and again just before the apex by a second, shallower emargination, so that in lateral view the lobe appears to terminate as a double hook.

The specimens from Sherifuri are small compared with *deplanatus*, the size ranging from 14.4 to 15.6 mm. There is a fourth specimen, a female, before me from Gombe, Matzoro Lakes, Northern Nigeria, also collected by Dr. Lloyd, which is undoubtedly conspecific with the Sherifuri specimens by the character of the short metasternal spine and the copious punctation of the head, pronotum and scutellum, but which measures 20 mm., which is very similar to the smaller specimens of *deplanatus* from Uganda in the British Museum. In view of the disparity in size between this specimen and the Sherifuri series, I have refrained from including it in the type series.

British Museum (Natural History),
Cromwell Road, London, S.W.7.
November, 1938.

Request for Books for the West China Union University.—The West China Union University, Chengtu, Szechuen, China, is trying to maintain its scientific work under the present difficult conditions, but nearly all their books have been lost. An appeal has been made for entomological literature, especially journals (of any sort) and pamphlets and reprints, especially such as deal with insects affecting rice, tea, sugar-cane, mulberry, cotton, citrus. Anyone who is willing to help them in this matter can send books to Mrs. K. J. Richardson, F.R.E.S., c/o The West China Union University, Chengtu, Szechuen, China.

Further information can be obtained from the Hon. Secretary, Royal Entomological Society, 41 Queen's Gate, London, S.W.7.—Eds.

COLEOPTERA IN A LIMITED AREA AT OXFORD.

BY JAMES J. WALKER, M.A., R.N., F.L.S.

As my old 'happy hunting-grounds' for beetles at Tubney, Cothill, Wytham Park, Shotover Hill and elsewhere in the Oxford district have for some time past been too distant as well as too extensive for my present powers of unaided locomotion, such collecting as I am now able to undertake without undue fatigue is perforce confined to a limited space in the immediate neighbourhood of my residence. This area comprises about thirty acres of meadow and cultivated land, extending to the River Cherwell, and includes a small farm-yard with an easily worked and highly productive manure-heap, several old hedges with one or two black poplars and ash trees and some fine elms, a few workable logs and stumps, and the usual pollard willows along the river-bank. The soil being generally somewhat moist, especially near the river, the meadows present a good variety of the more common wild flowers in their respective seasons; and the usual simple methods of collecting rarely fail to produce one or more desirable beetles, with now and then a rarity, when I feel the need of a couple of hours of exercise in the afternoon or evening. During the last three seasons (of which the one just ended was certainly the least productive, as appears to have been generally the case) I have observed, at a moderate estimate, fully 300 species of Coleoptera on this small area, and a selection of the more interesting of these species is possibly worthy of placing on record, if only as indicating that a long journey is not always needed to produce a respectable bottle of beetles. Among my captures on this ground are:—

Badister unipustulatus Bon. in wet refuse on the river-bank; *Acupalpus exiguus* Dej., occasionally by sweeping; *Ophonus rufibarbis* Fab., in heaps of vegetable rubbish; *Harpalus aeneus* Fab., a remarkable coal-black aberration; *Amara bifrons* Gyll., *ovata* Fab., *lunicollis* Schiödte, and *anthobia* Villa, by evening sweeping, the latter species not rare, but apparently confined to one small sandy bank; *Synuchus nivalis* Panz., in vegetable rubbish.

Haliplus laminatus Schall., in a cattle-trough; *Megempleurus porculus* Bed., by sweeping; *Cercyon lugubris* Ol. and *C. terminatus* Marsh., fairly common in manure-heap.

Aleochara lata Grav., common in dead rooks used as scarecrows, with *Microglossa pulla* Gyll., rarely; *A. moesta* Grav. (*crassiuscula* Sahlb.) plentiful in manure-heap in autumn; *Oxypoda spectabilis* Märk., one specimen swept up in mid-October, but lost through its extreme activity; *Atheta complana* Mann. (1), *angustula* Gyll., and *pagana* Er., by sweeping; *A. inquinula* Grav., in dung; *A. nigritula* Grav., in fungi, plentiful, and *A. xanthopus* Thoms., not rare in rubbish-heaps; *Encephalus complicans* Westw., and *Tachyporus formosus* Matt., occasionally by sweeping; *Bolitochara lucida* Grav. and *B. bella* Märk., not rare in large *Polypori* on elm-stumps; *Tachinus scapularis* Steph. and *Quedius cruentus* Ol., in manure-heap, scarce; *Staphylinus ater* Grav.; this usually maritime species has occurred on several occasions in heaps of vegetable rubbish with *S. compressus* Marsh., frequent. The manure-heap in the farm-yard is very productive in *Philonthi,* of which *P. longicornis* Steph. is perhaps the most abundant; other species include *P. splendens* Fab., *intermedius* Boisd., *mannerheimi* Fauv. (1) *umbratilis* Gram., *debilis* Grav., *agilis* Grav., *ventralis* Grav., *discoideus* Grav., *thermarum* Abeille, and *rectangulus* Sharp, the last-named being fairly common. *Gabrius bishopi* Sharp, in wet river refuse; *Neobisnius villosulus* Steph. and *N. procerulus* Grav., rarely by sweeping, which method has on two occasions produced *Medon apicalis* Kr. singly; *Astenus pulchellus* Heer, not rare in vegetable rubbish; *Bledius spectabilis* Kr., three examples by sweeping in May, 1932 (E.M.M. lxviii, p. 136); *Stenus circularis* Grav., *Oxytelus insecatus* Grav., *Platystethus capito* Heer, and *P. nitens* Sahlb., occasionally by sweeping; *Trogophloeus gracilis* Mann., not rare by sweeping weeds in farm-yard; *Syntomium aeneum* Müll., *Omalium oxyacanthae* Grav., and *Megarthrus denticollis* Beck, also by sweeping, the last-named fairly common, and never previously taken by me; *Pseudopsis sulcata* Newm., one specimen in damp straw in late autumn; *Siagonium quadricorne* Kirby, frequent under elm and poplar bark.

Necrophorus interruptus Steph., a pair in a dead blackbird; *Euconnus fimetarius* Chaud. and *Euthia scydmaenoides* Steph., in manure-heap; *E. schaumi* Kies., by evening sweeping, chiefly round a haystack, in which the minute *Cartodere ruficollis* Marsh. occurred literally in myriads; *Bythinus validus* Aubé and *B. burrelli* Denny, by sweeping, scarce; *Euplectus aubeanus* Reitt., under elm bark and by sweeping, singly; *Olibrus corticalis* Panz. (common), *Adonia variegata* Göeze, *Scymnus punctillum* Weise, and *Endomychus coccineus* Linn., the two latter rarely; *Dacne bipustulata* Thoms., plentiful in large *Polypori; Myrmecoxenus vaporariorum* Guér., *Hister merdarius* Hoffm., and *H. neglectus* Germ., in manure-heap, all three sparingly; *Carcinops 14-striata* Steph., not rare in heaps of decaying cut grass, with *Acritus nigricornis* Hoffm., in great numbers; *Kissister minima* Aubé, frequent by sweeping; *Saprinus virescens* Payk., on the umbels of *Anthriscus sylvestris* in May, evidently following the hordes of *Phaedon tumidulus* Germ., which infest that plant, but it is not very common. *Epuraea limbata* Fab., not rare in *Polypori; Nitidula rufipes* L. and *N. flavomaculata* Rossi, in 'scarecrow' rooks, not rare; *Meligethes brunnicornis* Sturm, on *Stachys sylvatica,* and *M. difficilis* Heer, on *Lamium album,* both common; *Librodor hortensis* Fourc., not rare on decaying *Polypori; Rhizophagus perforatus* Er., frequent, by sweeping under hedges; *Monotoma spinicollis* Aubé, *brevicollis* Aubé, *bicolor* Villa, and *longicollis* Gyll., all more or less common in manure-heap, with *Ahasverus advena* Waltl, rarely. *Antherophagus pallens* Fab., *Cryptophagus setulosus* Sturm, *umbratus* Er., *populi* Payk. (two or three specimens), and *pubescens* Sturm, by sweeping; *C. punctipennis* Bris., *badius* Sturm and *acutangulus* Gyll., in manure- and grass-heaps; *Paramecosoma melanocephalum* Herbst, *Atomaria fimetarii* Herbst, *umbrina* Gyll., *peltata* Kraatz, *fuscata* Schm. and *Ootypus globosus* Waltl, by general sweeping; *Pseudotriphyllus suturalis* Fab., and *Mycetophagus multipunctatus* Fab., plentiful in large *Polypori; Ctesias serra* Fab., larva frequent under elm bark; *Aspidiphorus orbiculatus* Gyll., rarely by sweeping.

Aphodius scybalarius Fab. (often nearly black), *subterraneus* Linn. and *foetens* Fab., not rare in dung; *A. porcus* Fab., rare, and *A. obliteratus* Panz., common, by sweeping in autumn. *Throscus obtusus* Curt., occasionally, *Cryptohypnus 4-pustulatus* Fab. and *Corymbites nigricornis* Panz., scarce, by sweeping long grass; *Cantharis bicolor* Hbst., in damp spots near the Cherwell, scarce; *Malachius marginellus* Ol., again common, but local; *Hedobia imperialis* Linn., *Grynobius excavatum* Kelln., and *Ochina ptinoides* Marsh., by sweeping under hedges, not rare; *Cis alni* Gyll., plentiful in small fungi on an elm stump; *C. bidentatus* Ol., abundant in dry *Polypori,* and *C. hispidus* Payk., under logs in farm-yard. *Laria rufipes* Hbst., sparingly in early summer, chiefly on umbels of *Anthriscus; Longitarsus castaneus* Duf., by sweeping damp herbage, not common; *L. ochroleucus* Marsh., not rare on groundsel in autumn: *Phyllotreta nigripes* Fab., *consobrina* Curt., *aerea* All., and *undulata* Kuts., all more or less plentiful on cabbage and horse-radish; *P. ochripes* Curt., on *Alliaria officinalis,* not rare. *Chalcoides plutus* Latr., common on willows; *Hippuriphila modeeri* Linn., not rare on dwarf *Equisetum*; *Psylliodes picina* Marsh., frequent on riverside herbage.

Tetratoma fungorum Fab., in tree-fungi, not common; *Lissodema 4-pustulata* Marsh , common by sweeping under hedges, and very variable in size; *L. cursor* Gyll., a black specimen by sweeping on August 3rd, 1936 (E.M.M., vol. lxxii, p. 209); *Anthicus bifasciatus* Rossi, fairly common in cut-grass and manure-heaps; *Xylophilus populneus* Panz., and *Anthribus variegatus* Geoff., both scarce, by sweeping under elm trees.

Apion (*Erythrapion*) *desideratum* Sharp, fairly common on sorrel (*Rumex Acetosa*), in late summer; *A. minimum* Hbst., one only by sweeping, the sole record as yet from the Oxford district; *A. difforme* Germ., *ebeninum* Kirby, *platalea* Germ., *pubescens* Kirby, etc., by general sweeping; *Barypithes pellucidus* Boh. (also in vegetable rubbish); *Tropiphorus tomentosus* Marsh., *Alophus triguttatus* Fab., and *Phytonomus trilineatus* Marsh., all more or less common by sweeping; *Sibinia signata* Gyll., and *Anthonomus rosinae,* both rare. The genus *Ceuthorrhynchus* (with its satellite *Ceuthorrynchidius*) is remarkably well represented, at least 25 species having come under my notice; some of these are very abundant, the common but pretty *C. troglodytes* Fab. often coming up by scores in the net when *Plantago lanceolata* is swept. The more noteworthy species include *C. constrictus* Marsh. and *roberti* var. *alliariae* Bris., common on *Alliaria,* with *C. rapae* Gyll , singly; *C. cochleariae* Gyll. on water-cress, and *C. litura* Fab. on thistles; *C. moguntiacus* Schultz, sparingly, *viduatus* Gyll. (singly), *punctiger* Gyll., and *rugulosus* Herbst, by sweeping mixed herbage; *C. parvulus* Bris. again on an isolated patch of *Nasturtium palustre,* but rarely; *C. quercicola* Payk., also rare, and *nigrinus* Marsh. on *Fumaria,* the latter abundant in 1936, but scarcely seen afterwards; and *C. mixtus* Muls., one specimen by sweeping weeds in farm-yard. *Phytobius 4-tuberculatus* Fab., *Limnobaris pilistriata* Steph. and *Baris lepidii* Germ. by sweeping in damp places near the river; *Eccoptogaster rugulosus* Ratz., *Hylastes attenuatus* Er., *Hylastinus obscurus* Marsh., *Cissophagus hederae* Sch., *Xyleborus dryographus* Ratz., and *X. saxeseni* Ratz., casual specimens of each species by general sweeping.

Aorangi, Lonsdale Road,
Summertown, Oxford.
December 20th, 1938.

CHRYSOPILUS NUBECULA Fallén (DIPTERA: RHAGIONIDAE), A SPECIES NEW TO BRITAIN.

BY H. OLDROYD, B.A.

A single female of this species was bred from a pupa collected by Mr. H. St.-J. K. Donisthorpe on June 18th, 1938, from the mud of a pond in Windsor Great Park. I am indebted to Dr. E. Lindner, of Stuttgart, for naming the specimen.

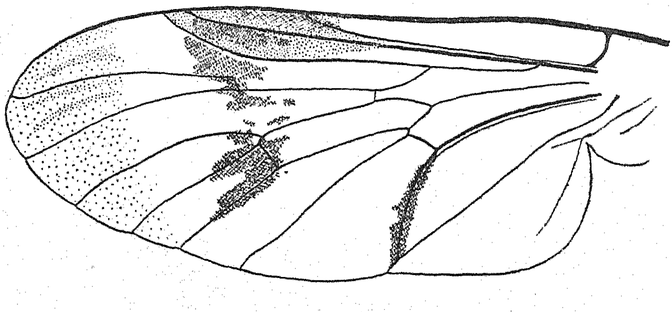
A predominantly yellow species, with yellow and black pile. Wings yellowish, with grey tip and distinct stigmal and poststigmal spots.

♀. *Head* : face and frons dark grey, with greyish-white tomentum. Epistoma yellow with rather sparse grey tomentum. Proboscis very pale yellow, palpi yellow basally, becoming dark brown at tips, with yellow hairs. First and second antennal segments pale orange-yellow, third segment and arista black. A few black hairs on vertex, postocular hairs and beard yellow.

Thorax : in ground colour bright orange, with an indistinct blackish square dorsally, just in front of scutellum. Mesonotum covered with bright golden pubescence, which is close-lying in front, longer and more upstanding behind. Two rather bare longitudinal stripes are visible from in front. Meso- and metapleura with a tuft of yellow hairs. Halteres pale yellow, with a small greyish patch at tip.

Abdomen : first four segments orange in ground colour both dorsally and ventrally. Fifth segment mainly black, only narrowly orange on hind margin. Following segments small and telescopic, mainly yellow, with two black stripes dorsally, black ventrally. Hairs of first segment entirely yellow, those of second to fourth segments black, in the form of a triangle, with its base on the anterior margin of the segment and its point behind. Other hairs dorsally, and all hairs ventrally, yellow.

Legs : yellow, only last four tarsal segments darker in ground colour, though the tibiae are made to look greyish by a covering of short black bristles.



Wings : yellowish-grey, with dark markings as figured.

Length of body 8 mm., *of wing* 7.5 mm.

In certain details the markings of this specimen do not agree with the published descriptions of *nubecula*, but this is probably due in part to this specimen being freshly emerged.

C. nubecula Fall. is found over the whole of Europe, but Lundbeck (1907) says it is not common in Denmark, and Séguy (1926) notes it as rather rare in Central France.

It may be separated from the other two British species of *Chrysopilus* as follows:—

1. Femora black .... *cristatus* Fabr.
   Femora yellow .... 2.
2. Wings clear except for stigma; small grey-green species (6 mm.) *aureus* Meig.
   Wings with dark markings; larger orange species (8 mm.) .... *nubecula* Fall.

British Museum (Natural History),
Cromwell Road, London, S.W.7.
December 8th, 1938.

THE MALLOPHAGA (BITING-LICE) RECORDED FROM THE PACIFIC ISLANDS.

BY GORDON B. THOMPSON.

(*Continued from Vol. LXXIV, p.* 208)

41. *Myrsidea buxtoni* Waterston.

Myrsidea buxtoni Waterston, 1928, Insects of Samoa, Pt. VII, fasc. 3, 79-80, f. 1, 2a.

Recorded host: *Aplonis atrifusca* (Peale).

Locality: Samoa, Apia.

42. *Myrsidea conspicua* (Kellogg and Chapman).

Colpocephalum conspicuum Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, pp. 163-164, Pl. 14, f. 4.

Myrsidea conspicua (Kellogg and Chapman), Ferris, 1916, Canad. Ent., XLVIII, p. 308.

Recorded host: '*Carpodacus mexicanus obscurus.*'

Locality: Hawaiian Is., Maui I., Olai, Kahului.

43. *Myrsidea invadens* (Kellogg and Chapman).

Menopon invadens Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, p. 167, Pl. 15, f. 5.

M. invadens Kellogg and Chapman, Kellogg and Paine, 1910, Ent. News., XXI, p. 125.

Myrsidea invadens (Kellogg and Chapman), Ferris, 1916, Canad. Ent., XLVIII, p. 308.

M. invadens (Kellogg and Chapman), Ferris, 1932, Bull. Bishop Mus., Honolulu, 98, pp. 10-11, f. 3, 4.

Recorded hosts: '*Acridotheres tristis*'; *Spilopelia chinensis* (Scop.) (*Turtur chinensis*).

Probable true host: '*Acridotheres tristis.*'

Localities: Hawaiian Is., Maui I.; Tahiti, Hitiaa.

44. *Myrsidea rustica* (Nitzsch).
Menopon rusticum Nitzsch in Giebel, 1874, Ins. Epiz., p. 288.
M. rusticum Nitzsch, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, P. 322.
Myrsidea rustica (Nitzsch), Harrison, 1916, Parasitology, IX, p. 59.
Recorded host: *Progne modesta* (Neboux).
Locality: Galapagos Is., Indefatigable I.

45. *Myrsidea teraokai* Uchida.
Myrsidea teraokai Uchida, 1918, Annot. Zool. Jap., IX, pp. 490-491, f. 1.
M. teraokai Uchida, 1926, J. Coll. Agr., Tokyo, IX, p. 17.
M. teraokai Uchida, Waterston, 1928, Insects of Samoa, VII, fasc. 3, p. 78, f. 2b.
Recorded host: *Aplonis opaca* (Kittl.).
Locality: Caroline Is., Truk I.

46. *Dennyus distinctus* Ferris.
Dennyus distinctus Ferris, 1916, Canad. Ent., XLVIII, pp. 310-311, f. 15.
D. distinctus Ferris, 1932, Bull. Bishop Mus., Honolulu, 98, pp. 56-57, f. 9-10.
Recorded host: *Collocalia ocista* Oberholser.
Localities: Marquesas Is., Uahuka, Vaipaee Valley.

47. *Trinoton lituratum* Nitzsch.
Trinoton lituratum Nitzsch in Burmeister, 1838, Handbuch der Entomologie, ii, p. 441.
T. lituratum Nitzsch, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 320.
Recorded host: '*Anas versicolor*.'
Locality: Galapagos Is., Indefatigable I.

48. *Trinoton querquedulae* (Linn.).
Pediculus querquedulae Linn., 1758, Syst. Nat., p. 612.
Trinoton luridum Nitzsch in Burmeister, 1838, Handbuch der Entomologie, ii, p. 441.
T. querquedulae (Linn.), Harrison, 1916, Parasitology, IX, p. 62.
Recorded hosts: '*Anas versicolor*'; *Haematopus palliatus galapagensis* Ridgway (*Haematopus galapagoensis*).
Probable true host: ? *Poecilonetta galapagensis* Ridgway.
Locality: Galapagos Is., Indefatigable I.

49. *Ancistrona vagelli* (Fabricius).

Pediculus vagelli Fabr., 1787, Mant. Ins., p. 369.

Ancistrona procellariae Westwood, 1874, Thes. ent. Oxon., p. 197, Pl. 37, f. 4.

A. gigas Piaget, 1883, Tijdschr. ent., XXVI, p. 152, Pl. 9, f. 1.

A. gigas Piaget, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 483.

A. gigas Piaget, Kellogg and Paine, 1910, Ent. News, XXI, p. 125.

A. procellariae Westwood, Johnston and Harrison, 1912, Trans. N.Z. Inst., XLIV, pp. 364-365.

Recorded hosts: *Cookilaria hypoleuca* (Salvin) (*Aestrelata hypoleuca*); ? *Pelagodroma marina passerina* (Mathews) (*Pelagodroma marina*).

Localities: Galapagos Is.*; Laysan I.; Kermadec Is.

50. *Ricinus angulatus* (Kellogg).

Physostomum angulatum Kellogg, 1896, Proc. Calif. Acad. Sci., VI, p. 515, Pl. 70, f. 5.

P. angulatum Kellogg, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 483.

Ricinus angulatus (Kellogg), Harrison, 1916, Parasitology, IX, p. 66.

Recorded hosts: *Myiarchus magnirostris* (Gray); *Dendroica petechia aureola* (Gould).

Locality: Galapagos Is., Albemarle I.

51. *Goniocotes chinensis* Kellogg and Chapman.

Goniocotes chinensis Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, p. 160, Pl. 12, f. 5.

Recorded host: *Spilopelia chinensis* (Scop.).

Locality: Hawaiian Is., Maui I.

52. *Goniocotes galapagensis* Kellogg and Kuwana.

Goniocotes galapagensis Kellogg and Kuwana, 1906, Proc. Wash. Acad. Sci., IV, pp. 481-482, Pl. 30, f. 5.

G. galapagensis Kellogg and Kuwana, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 320.

Recorded hosts: *Cactospiza pallida producta* (Ridgway); *G. f. fuliginosa* Gould; *Oceanites gracilis galapagoensis* Lowe; *Fregata* sp.; *Sula piscator websteri* Rothschild; *Anous stolidus galapagensis* Sharpe; *Nesopelia g. galapagoensis* (Gould).

---

* The host from which this species was recorded from the Galapagos Is. was not stated by Kellogg and Kuwana (1902).

Probable true host: *Nesopelia galapagoensis* (Gould).

Localities: Galapagos Is., Albemarle I., Narborough I., Wenman I., Bindloe I.

53. *Lipeurus minhaensis* Kellogg and Chapman.

Lipeurus docophoroides minhaensis Kellogg and Chapman, 1902, J.N.Y. ent. Soc., V, pp. 159-160.

Recorded host: '*Acridotheres tristis.*'

Locality: Hawaiian Is., Maui I., Lahaina.

NOTE.—The host given by Kellogg and Chapman is not the true host.

54. *Philopterus armatus* Johnston and Harrison.

Philopterus armatus Johnston and Harrison, 1912, Trans. N.Z. Inst., XLIV, pp. 370-372, f. 7-10.

Recorded host: *Phaeopus phaeopus variegatus* (Scop.).

Locality: Kermadec Is.

55. *Philopterus breviformis* (Kellogg and Kuwana).

Docophorus breviformis Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 463-464, Pl. 28, f. 3.

D. breviformis Kellogg and Kuwana, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 317.

Philopterus breviformis (Kellogg and Kuwana), Harrison, 1916, Parasitology, IX, p. 89.

P. breviformis (Kellogg and Kuwana), Ewing, 1924, Zoologica, N.Y., V, p. 82.

Recorded hosts: *Progne modesta* (Neboux); *Geospiza fortis* Gould; *Actitis macularia* (Linn.).

Probable true host: *Progne modesta* (Neboux).

Localities: Galapagos Is., Albemarle I., Indefatigable I.

56. *Philopterus conicus* (Denny).

Docophorus conicus Denny, 1842, Monographia Anoplurorum *Britanniae*, p. 90, Pl. 5, f. 2.

D. fuliginosus Kellogg, 1896, Proc. Calif. Acad. Sci., VI, Ser. 2, pp. 80-82, Pl. 3, f. 2.

D. fuliginosus hawaiiensis Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, p. 157.

Philopterus wallacei Johnston and Harrison, 1912, Trans. N.Z. Inst., XLIV, pp. 369-370, f. 5, 6.

P. conicus (Denny), Harrison, 1916, Parasitology, IX, p. 92.

Recorded hosts: *Pluvialis dominicus fulvus* (Gmelin); *Heteractitis incanus* (Gmelin).

Localities: Hawaiian Is., Hito, Maui I.; Kermadec Is.

57. *Philopterus corvi* (Osborn).

Docophorus corvi Osborn, 1896, Div. Ent., U.S. Dept. Agric., Bull. 5 (n.s.), pp. 220-221, f. 142.

D. corvi Osborn, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 317.

Recorded host: *Corvus* sp.

Locality: Galapagos Is., Clarion I.

NOTE: As has been previously pointed out by Harrison (1916) Osborn's *P. corvi* needs renaming if it is distinct from *P. corvi* (Linn.).

58. *Philopterus cursor* (Nitzsch).

Docophorus cursor Nitzsch in Burmeister, 1838, Handbuch der Entomologie, ii, p. 426.

D. cursor Nitzsch, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 317.

Philopterus cursor (Nitzsch), Harrison, 1916, Parasitology, IX, p. 92.

Recorded host: *Asio galapagoensis* (Gould).

Locality: Galapagos Is., Clarion I.

59. *Philopterus domesticus* (Kellogg).

Docophorus domesticus Kellogg, 1896, Proc. Calif. Acad. Sci., VI, Ser. 2, pp. 475-476, Pl. 65, f. 4.

D. domesticus Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 317.

Philopterus domesticus (Kellogg), Harrison, 1916, Parasitology, IX, p. 317.

Recorded host: *Progne modesta* (Neboux).

Locality: Galapagos Is., Indefatigable I.

60. *Philopterus galapagensis* (Kellogg and Kuwana).

Docophorus galapagensis Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 464-465, Pl. 28, f. 4.

D. galapagensis Kellogg and Kuwana, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 317.

Philopterus galapagensis (Kellogg and Kuwana), Harrison, 1916, Parasitology IX, p. 95.

Recorded hosts: *Geospiza f. fuliginosa* (Gould); *G. c. conirostris* Ridgway; *G. fortis* Gould; *Cactospiza pallida producta* (Ridgway); *Camarhynchus prosthemelas* Sclater and Salvin; *Nesomimus parvulus* (Gould).

Localities: Galapagos Is., Albemarle I., Chatham I., Narborough I., Indefatigable I.

61. *Philopterus insulicola* (Kellogg and Kuwana).

Docophorus insulicola Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 466-467, Pl. 28, f. 6.

Philopterus insulicola (Kellogg and Kuwana), Harrison, 1916, Parasitology, IX, p. 97.

Recorded hosts: *Certhidea olivacea* Gould; *Pyrocephalus nanus intercedens* Ridgway; *Geospiza fuliginosa* subsp.

Locality: Galapagos Is., Albemarle I.

62. *Philopterus macgregori* (Kellogg and Chapman).

Docophorus macgregori Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, pp. 156-157, Pl. 13, f. 1.

Recorded host: *Chlorodrepanis virens* (Gmelin).

Locality: Hawaiian Is., Maui I., Kahului and Ias Valley.

(*To be continued*)

The Victoria County History of Cambridgeshire—Notes and corrections.—I wish to draw attention to an unfortunate omission similar to that recorded by Mr. J. C. F. Fryer (*E.M.M.*, 1938, p. 279, *q.v.*). On the same title-page, I am given as the sole author of the section on Hymenoptera-Apocrita. In actual fact G. M. Spooner was responsible for the part of this paper dealing with the group Aculeata, except the three families of small Vespoidea: he revised thoroughly his former paper (1930) on the Cambridgeshire Aculeata, incorporating all new records, and bringing the nomenclature up to date. Although I recast Spooner's classification and although I was solely responsible for the subsequent condensation necessary on account of space requirements, the paper should have appeared under our joint authorship.

The following species were recorded as new to the British list: *Barichneumon humilis* Wesm. (Ichneumonidae), *Myiocephalus boops* Wesm. (Braconidae), and *Figites laevigatus* Dahlb. (Cynipoidea). *Myiocephalus boops* Wesm. (p. 175) is a misdetermination for *Paxyloma buccata* de Breb., which is not new to Britain. I am very grateful to Mr. S. Brans for bringing this error to my notice.—G. J. Kerrich, University Museum, Manchester: *December 13th*, 1938.

A diminutive example of Pissodes notatus Fab.—On October 14th last I beat out of a sallow bush on one of the Woking commons a small weevil, which at a hasty glance was thought to be a stray specimen of *Thryogenes scirrhosus* Gyll., a species not hitherto recorded from the locality. The insect puzzled me considerably when I mounted it a few days ago, but it was finally recognised as an exceedingly small ♂ of *Pissodes notatus* Fab., a well-known Woking weevil. My specimen measures just 4.5 mm. in total length, which is less than half that of the largest example in my series, also from the same locality. This is 9.5 mm. in length, and thus not far short of ten times the bulk of my 'micromorph,' which I think deserves a passing notice.—JAMES J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford: *December 12th,* 1938.

Xanthandrus comtus Harris in Dumfriesshire.—On the afternoon of August 11th, 1936, which was rather dull, I noticed an unfamiliar Syrphid at rest on a flower in my garden. I caught it with my fingers and it afterwards proved to be a female of the rare *X. comtus* Har. Verrall (Brit. Syrph., p. 318) records it from several counties in Southern England from August 3rd, and adds that there is a record from Northern Ireland in 1895. Prof. Carr took it near Nottingham. The late Wm. Evans records it (Scot. Nat., 1915, p. 40) from the lighthouse on the Isle of May. Lundbeck says it is not common in Denmark.—JAS. MURRAY, 6 Burnside Road, Gretna, Dumfriesshire: *December 17th,* 1938.

Gonepteryx rhamni on the wing in December.—This morning, I saw a specimen of Gonepteryx rhamni (♂) on the wing on the Torrington Road. It is indicative of the extraordinary mildness of the weather; and as I do not remember ever having seen this butterfly out in December before, I thought it might be worth recording. Even more remarkable was the emergence of a specimen of *Pieris rapae* in a south verandah of this house on December 20th.—J. E. CAMPBELL-TAYLOR, 'Duart,' Orchard Hill, Bideford, Devon: *December 12th,* 1938.

Obituary.

Mr. Rosse Butterfield, of High Cote, Riddlesden, Yorkshire, curator of the Keighley (Yorkshire) Corporation's Museum, has died in Keighley Victoria Hospital following an operation for appendicitis. Mr. Butterfield, who was aged 64, was one of the best known naturalists in the West Riding. He came of a Wilsden family of naturalists and his father was a well known authority. Another member of the family was the late Mr. Ruskin Butterfield, formerly the curator at Hastings Museum.

Mr. Rosse Butterfield had done an enormous amount of valuable work in connection with naturalist organisations and he was a recognised authority in several subjects, notably entomology. He was a Fellow of the Royal Society in that science. He had been the curator of Keighley Museum since 1910 and was due to retire next year. Under his guidance the development of the museum collections and of education in natural history had made rapid strides. He was a member of the executive of the Yorkshire Naturalists' Union and was secretary of the Keighley Naturalists' Society. He was a member of the committee of the Bradford Natural History and Microscopical Society and was recorder for Hymenoptera (Entomology). Formerly Mr. Butterfield was curator of the Bronte Museum at Haworth.

Society.

Entomological Club.—A meeting of the Entomological Club was held at 65 Lee Road, Blackheath, on October 8th, 1938, Dr. Richard R. Armstrong in the Chair.

Members present in addition to the Chairman: Mr. H. St. J. K. Donisthorpe, Mr. H. Willoughby Ellis, Mr. Jas. E. Collin, Dr. Harry Eltringham, Mr. W. Rait-Smith.

The guests were received at 1 o'clock by Dr. and Miss Armstrong. Luncheon was served at 1.30. After luncheon the Chairman selected a number of genera of exotic butterflies for exhibition, notably *Delias, Dismorphia, Colias* and the *Callithea—Catagramma* group. Owing to lack of time, the general collection of Pieridae could not be seen.

A tour of the gardens was shortened by rain, but the Chairman's stud of coloured lace-fantail pigeons was inspected. The lace-fantail, in common with the silky fowl, has the barbules missing from the feather strand so that the feathers do not ' web ' and the birds cannot fly. The coloured varieties were produced by crossing plain feathered, coloured (yellow) birds with the original stock white lace. Self-coloured blue laces result and these, paired to the desired plain-feathered coloured bird, in this case yellow, produced yellow laces, etc., in more than half the offspring. Lace is feebly dominant to plain feather. The first cross blues are completely heterozygous for colour.

After tea the guests left about 6 o'clock—a very entertaining afternoon.—H. Willoughby Ellis, *Hon. Secretary.*

A meeting of the Entomological Club was held at the Junior Carlton Club on Friday, November 25th. Mr. H. Willoughby-Ellis in the Chair.

Members present in addition to the Chairman: Mr. H. St. J. K. Donisthorpe, Dr. Harry Eltringham, Mr. W. Rait-Smith, Dr. Sheffield Neave, Dr. Richard Armstrong. Visitors present: Mr. H. E. Andrewes, Dr. K. G. Blair, Mr. J. C. F. Fryer, Dr. A. D. Imms, Dr. Karl Jordan, Sir Guy A. K. Marshall, Capt. N. D. Riley, Mr. W. H. T. Tams, Dr. C. B. Williams.

The meeting was called for 7 o'clock and the members and visitors were received by the Chairman in the ante-room, where refreshments were available. This hour preceding dinner provided an opportunity for general conversation, which was much enjoyed.

Dinner was served at 8 o'clock in the Parliamentary Library on the historic round table. After the toast of the King Dr. Jordan showed the imago, chrysalis and cocoon of a West African moth, *Eligma hypsoides* Walk. (1869) and explained the interesting stridulating apparatus of the chrysalis. Unlike the usual type of stridulation, the rattling sound made by the pupa in the cocoon is not produced by the friction of two parts of the pupa against each other, but by the disturbed chrysalis rapidly playing a densely ribbed subapical transverse bar over sharp longitudinal regular ridges constructed in fan-shape on the inner surface of the cocoon; an approach to a primitive string instrument, except that the ridges are firmly attached to the surface of the cocoon. Provision without prevision on the part of the caterpillar? A lively discussion on the possible origin of this instrument and the bearing of Natural Selection on its perfection ensued, and made an enjoyable meeting also scientifically profitable.

The meeting ended about 11 o'clock.—H. Willoughby Ellis, *Hon. Secretary.*

NOTES ON BRITISH COLLEMBOLA.

BY RICHARD S. BAGNALL, D.SC.

This is continued from Ent. Mo. Mag., LXXI (1935), pp. 61-63, and is the third contribution of the series. In the interim, I have published several papers on British Collembola, chiefly dealing with the Onychiuridae, as follows:—

(*a*) 1935, The British Tullbergiinae, Pt. I, Ent. Mo. Mag., LXXI, pp. 164-173, Figs. 1-11 (July).

(*b*) 1935, Contributions towards a knowledge of the Scottish Onychiuridae (Collembola), I, Scot. Nat., 1935, pp. 111-117 (July-Aug.).

(*c*) 1935, Random notes on Springtails (Collembola) in the North of England, I, Vasculum, XXI, No. 3, pp. 98-103.

(*d*) 1936, The British Tullbergiinae, Pt. II, Ent. Mo. Mag., LXXII, pp. 34-40, Figs. 12-25 (Feb.).

(*e*) 1937, Contributions towards a knowledge of the Scottish Onychiuridae (Collembola), II, Scot. Nat., 1937, pp. 87-90 (May-June) and pp. 145-150 (Sept.-Oct.).

In these contributions the following species have been brought forward as British :—

HYPOGASTRURIDAE. *Hypogastrura socialis* Uz., (c), p. 97, and *Xenylla longispina* Uz., (c), p. 99.

ONYCHIURIDAE. *Onychiurus absoloni* (Born.), (b), p. 112; *O. littoralis* sp.n., (b), p. 114; *O. daviesi* sp.n., (b), p. 113; *O. octopunctatus* (Tullb.), Handschin, (b), p. 114; *O. tullbergi* sp.n., (b), p. 115; *O. flavescens* sp.n., (b), p. 115; *O. edinensis* sp.n., (b), p. 117; *O. moniezi* sp.n., (c), p. 102; *O. stachi* sp.n. (c), p. 102; *O. magnicornis* sp.n., (e), p. 88; *O. subaequalis* sp.n., (e), p. 88; *O. celticus* sp.n., (e), p. 146; *O. imminutus* sp.n., (e), p. 146; *O. pygmaeus* sp.n., (e), p. 146; *O. subambulans* Den., (e), p. 147; *O. rectospinatus* Stach, (e), p. 147; *O. bearei* sp.n., (e), p. 148; *O. laminatipes* sp.n., (e), p. 148.

The true *O. debilis* (Mon.), Den., (e), p. 145, is brought forward, and the name *O. halophilus* n.n. is proposed for *littoralis* Bagn., 1935, nec Dürkop, 1935, (e), p. 89.

Paratullbergia carpenteri sp.n., (a), p. 168, figs.; *P. womersleyi* sp.n., (a), p. 169; *P. macdougalli* sp.n., (d), p. 36, figs.; *Neonaphorura dubosqi* (Den.), (a), p. 170, figs. (=*N. anglicanus* sp.n., (d), p. 38, figs.); *N. dubosqi* (Den.), (d), p. 38, figs.; *Stenaphorura iapygiformis* Abs., (a), p. 171; *S. axelsoni* sp.n., (a), p. 172; *S. denisi* sp.n., (a), p. 172, figs.; *S. lubbocki* sp.n., (a), p. 173, figs.; *S. absoloni* sp.n., (d), p. 40, figs.; *Neotullbergia laingi* sp.n., (d), p. 35, figs.; *Metaphorura borneri* sp.n., (d), p. 36, figs.; *M. thalassophila* sp.n., (e), p. 150; and *M. iowensis* (Mills), (e), p. 150.

Whilst most of my recent researches have been with the Onychiuridae, I have secured material sufficient to show that other families or smaller groups will repay collecting and study, and in the following pages a new light is thrown on the Isotomiid genus *Folsomia*.

Herein the following are for the first time recorded as British:—

Polycanthella thalassophila sp.n., *Onychiurus minutus* Den., *Tetracanthella kendalli* sp.n., *Uzelia setifera* Abs., subsp., *coniferarum* nov., and *Folsomia garretti, distincta, kingi, litsteri, simile, penicula, monobechei,* and *achaeta* spp.n.

A Roumanian species, *Folsomia monophthalma* sp.n., is described in an addendum.

In thanking those who have helped me in gathering material and in other ways, I am pleased to have the opportunity of dedicating species to P. F. Kendall (Edinburgh), F. C. Garrett, D.Sc., O.B.E. (Alnmouth), Prof. F. A. L. King (Glasgow), J. G. Litster (Belfast) and M. Monobeche (Roumania). I also wish to acknowledge my indebtedness to the Royal Society for a substantial grant towards the cost of a high-power modern microscope.

Genus *Polycanthella* Schaff.

Near *Friesia*. Anal spines 4-6 straight and posteriorly directed.

Polycanthella thalassophila sp.n. (Figs. 1-3 & 6-8).

Length c. 1.5 mm. Colour buff to golden-yellow. Claw long and slender, about 0.7 the length of the tibiotarsus, which is furnished with long and short bristles, but without true tenent hairs (Fig. 2). Furca vestigial, members fused (Fig. 7). Ommatidia 8 on each side, in two series of 5 and 3, minute and separately pigmented (Fig. 6). PAO apparently absent. End of antenna furnished with terminal knob guarded with a series of sensory bristles (Fig. 3). End of abdomen somewhat obconical VI, furnished with six long backwardly directed bristle-like spines, a lower series of 4 and a pair near apex (Figs. 1 and 8).

The species is most closely allied to the Italian species, *P.* (*Conotelsa*) *acuminata* Denis, in which the furca is well developed.

DORSET, Swanage. Several on the sands well below high-water mark, and difficult to see on account of their colour, iv.18. Unfortunately only two examples, mounted in balsam, have been preserved, and I have delayed describing the species in the hopes of securing further material. Since rediscovered at Canvey, Canvey Island, Essex, in some numbers, iii.38 (types and paratypes).

Onychiurus minutus Denis.

1932, Arch. Zool. Exp. Gen., 74, p. 363, figs.

A minute and strongly characterised species. The PAO is comprised of 10-11 circular bosses, having a granular aspect. The Pso number three at the base of each antenna, and behind the second an additional one outside the post-antennal area. Other Pso on each side are as follows: hind margin of head, 2; th. i, 1; th. ii and iii and Abd. I-III, 2+1 lateral; Abd. IV, 3+1, lateral and 1 anterolateral, and Abd. V with a characteristic group as figured by Denis and above (on a line between the upper pair) is a short, somewhat stout seta. The AH are setiform. The claws are without teeth, and the empodial appendage, which is without lamella, does not attain the apex of the claw.

DURHAM. Gibside, under bark of log, lying at edge of woods, 26.xii.36. Previously known from the South of France.

Onychiurus edinensis Bagn.

This species is to be searched for under stones lying on water-logged ground, and in such situations it is apparently of wide distribution. It is one of our most distinct species, and in the field it has the appearance of a large *Stenaphorura*. In FIFE and around Edinburgh (Roslin, Blackford Hill and Pentlands) it has occurred in water-logged fields, and at Corstorphine it is sometimes plentiful in a very damp corner of the woods; I also have it from the Dalmeny Estate. In England it occurs in Epping Forest, ESSEX (notoriously water-logged in winter), whilst I have found it in considerable numbers at Gibside (DURHAM) under stones lying in a water-logged field and at the edge of a farmyard pond at Fatfield. Also from Ireland (*J. Litster*).

Mesaphorura iowensis (Mills).

Since recording this minute species from Hawick, I find that it is the commonest species with us, and of wide distribution. Also from Ireland (*J. Litster*).

Tetracanthella wahlgreni Axels.

Bagnall, 1914, J. Econ. Biol., IX, p. 7, Figs. 5-6; Davies, 1934, Ent. Mo. Mag., LXX, p. 92, and North Western Nat., p. 119; Bagnall, 1935, Vasculum, XXI, p. 103.

Recently brought forward as British by Davies, who took it plentifully in N. Wales in soil from under stones and moss at 2,000 to 3,400 ft. Recorded by the writer from near the summit of Cheviot at about 2,500 ft. (v.13) and from the Pentlands at 1,000 to 1,250 ft. (coll. Kendall).

Tetracanthella kendalli sp.n. (Figs. 4 & 5).

Length 0.8—1.0 mm. Ground colour lemon-yellow, mottled or flecked with pale blue (underside) to dark blackish-blue; eyespots black; antennae of a uniform purplish blue, legs greyish, end of abdomen brownish-yellow. Antenna slightly shorter than dorsal length of head, relative lengths of segments 7 : 12 : 11 : 22. Legs somewhat stout, foot about as long as the posterior AH and 0.6 the length of the tibiotarsus; empodial appendage narrowed to a point, from 0.3 to 0.5 the length of the inner margin of claw; hind pair at least with a single long seta (tenent hair) at hind margin (Fig. 4). Furca reduced, short and stout, without mucro; mucrodens at least 0.6 the length of the manubrium, furnished with two setae (Fig. 5). Posterior or major AH slender, slightly curved, about three times as long as their lateral breadth, just before base, and slightly longer than the hind margin of papilla supporting them; inferior AH almost straight, c. 0.75 the length of the superior.

SCOTLAND, Boghall, Pentlands, in soil, iv.31. Kendall coll., No. PA 8.

Genus *Uzelia* Absolon 1901.

=*Protanurophorus* (Wom. & Bagn.) in Womersley, 1925, Ent. Mo. Mag., LXI, p. 251.

Uzelia setifera Absolon.

1901, Zool. Anz., 24, p. 209; *Protanurophorus pearmani* Womersley, 1925, l.c., p. 251.

There is little doubt as to the accuracy of the above synonymy.

Uzelia setifera coniferarum nov.

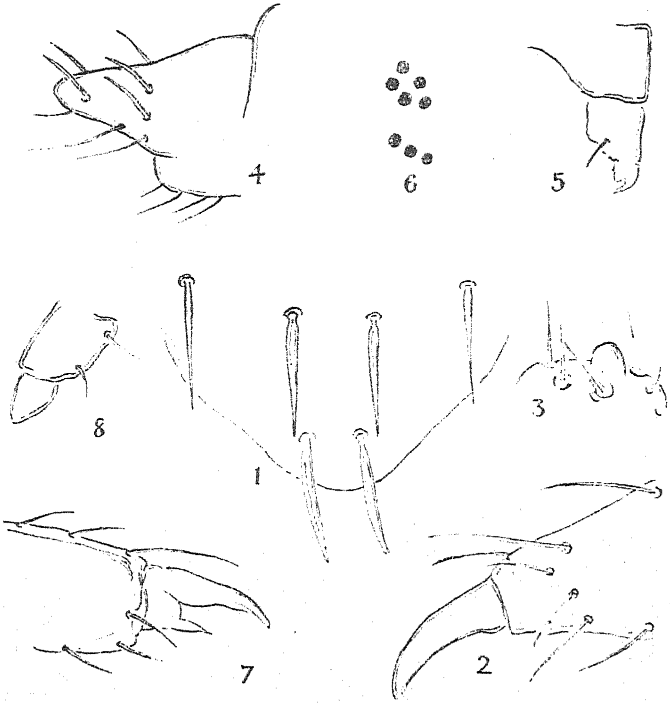
I have taken a form of *Uzelia* that comes close to *setifera* but differs in its substantially longer AH as compared with the length of claw.

The AH are comparatively long and slender, and c. 0.4 the length of the claw compared with 0.2 to 0.25 in *setifera*. The foot is as in *setifera*, but the empodium would appear to be produced into a more pronounced hump in place of appendage. The thoracic segments ii—iii and intermediate abdominal segments are each furnished with a pair of long, strong lateral bristles, as long as or about as long as the median length of Abd. IV, but I find that these are present in Womersley's specimens, and were overlooked in his description.

This form also differs in its habitat, my examples being found exclusively on conifers in mountainous regions. SWITZERLAND, Zurich, on *Abies*, summit of the Utelieberg (2,800 ft.), vii.25;

FRANCE, Eastern Pyrenees, on *Pinus* sp., Font Romeu and Lake Bouillouse, at c. 6,000 ft.; N. ITALY, Dolomites, on *Pinus*, vii.29.

SCOTLAND, near Grantown-on-Spey, a solitary example by beating pine, ix.31.



FIGS. 1—8.

1—6, *Polycanthella thalassophila* sp.n. 1, End of abdomen, showing position of anal spines; 2, left hind foot; 3, apex of antenna (all from Swanage example); 4, end of abdomen, viewed laterally; 5, furca; 6, ommatidia (all from fresh Canvey example). 7 and 8, *Tetracanthella kendalli* sp.n. 7, Right hind-foot; 8, mucrodens.

Proisotoma angularis Axels.

Isotoma angularis Axelson, 1905, Zool. Anz., XXVIII, No. 24/25, p. 791; 1905, Festschr. f. Palmer, No. 15, p. 30, pl. 1, Figs. 2-6; *Proisotoma angularis* Axelson, 1907, *Apteryg. Finl.*, I and II.

A small pale species, c. 0.8 mm. in length, which agrees with *P. minima* in the possession of only five ommatidia on each side of the head; the ommatidia, however, are heavily pigmented in four unequal largish flecks, whereas in *minima* they are only very lightly pigmented, forming five small spots.

The manubrium is without ventral bristles and the mucro is two-toothed (three-toothed in *minima*). The angulation of the hind body viewed laterally is very marked.

NORTHUMBERLAND: Coast at mouth of Brier's Dene near Whitley Bay, viii.28.

Proisotoma minima Abs.

I have received single examples of this rare little species from S. Devon and Ireland (*J. Litster*).

Genus *Folsomia* Will.

This genus is richly represented in the British Isles, and contains at least two halophilous species. Most of the species have been found in some plenty, and I have been able to use a new and valuable character as an aid to the preliminary separation of the species, namely the specialised chaetotaxy of the ventral surface of the manubrium.

I hope to illustrate this and other features at an early date, and am accumulating further material to that end, but meanwhile I consider it advisable to diagnose briefly the species.

I. *fimetarius* Group. Species white, without pigmentation or ommatidia.

SECTION A. *Mucro tridentate.*

This section contains two species which may be separated by means of the following key:—

(*a*) Size smaller (1.3 mm.). Manubrium with 2—3 ventral bristles on each side; dentes twice as long as manubrium. Relative lengths of Ant. I—IV—8 : 12 : 12 : 24 (vide Axelson) .... *F. fimetarioides* Axels.

(*b*) Size larger (1.6—1.9 mm.). Manubrium with one strong ventral bristle on each side, which overhangs the distal margin; dentes and manubrium approximately subequal in length. Relative lengths of Ant. I—IV —12 : 24 : 19 : 37. Littoral species .... *F. garretti* sp.n.

Folsomia garretti sp.n.

Readily recognised by the characters given in the above key. The comparative lengths of the intermediate antennal joints are interesting—it will be seen that in *fimetarioides* (vide Axelson) II is 1.5 times as long as I and equal in length to III, whilst IV is twice the length of II, whereas in *garretti* II is 2.0 times as long as III, whilst IV is approximately 1.5 times the length of II and twice the length of III.

SCOTLAND: Shore of Dalmeny Estate and S. Queensferry with various halophilous species, xii.34 onwards. Coast between Cramond and Granton, several examples, i.37 onwards. NORTHUMBERLAND: Alnmouth, not uncommon under rotting bark of a log embedded in mud of estuary below high-water mark with *F. fimetaria*, etc., iv.37 (type and paratypes). DURHAM: Mouth of Ryhope Dene in numbers, vi.34. YORKS: Ferriby, under log embedded at high-water mark on the banks of the Humber, iv.37.

SECTION B. *Mucro bidentate.*

This section contains a number of species ranging from substantially less than a millimetre to c. 3.0 mm. in length and which have up to now for the most part constituted the species *fimetaria*. The subsections may be subdivided by the number and position of the ventral bristles of the manubrium.

Subsection I. Ventral surface of manubrium with a longitudinal series of seven or more bristles on each side stretching the length of the manubrium .... =*distincta* group.

(*a*) Size smaller (1.6 mm.). Ventral bristles of manubrium numbering 8 (7—10) on each side, the most distal stouter and longer than the others. Claws simple, the hind claw c.2.5 times the length of the mucro; empodial appendage with strong inner lamina, semi-circular in form. Longest bristle at base of ventral tube 1.5—1.6 times as long as the mucro. .... *F. distincta* sp.n.

(*b*) Size larger (2.4—2.7 mm.). Ventral bristles of manubrium numbering 13—14 (12—16) on each side. Claws strongly toothed as in *dentata* Fols., the hind claws 2.8—2.9 times the length of mucro; empodial appendage not strongly laminate within. Longest bristle at base of ventral tube 2.2—2.5 times as long as the mucro .... *F. kingi* sp.n.

Folsomia distincta sp.n.

This and the following species are well characterised in the above key. In both species the PAO is somewhat broad at middle, some 3.0 times longer than the breadth and two-thirds as long as the breadth of Ant. I. The dentes of *distincta* are 1.5—1.65 times as long as the manubrium, whilst in *kingi* they are 1.35—1.4 times as long, and the longest abdominal bristles near the end of the body are about 3.0 times as long as the mucro compared with 4.0—4.5 times the length in *kingi*.

It should be noted that I have set aside a series of a much smaller form from S. Devon, in which the structure of the empodial appendage appears to be different and in which the longest bristles at the base of the ventral tube are scarcely longer than the mucro.

SURREY, Boxhill, under bark of ash, vi. 34. LONDON, Dulwich Wood Park, S.E.19, vii. 34 (types and paratypes). S. DEVON, Dartmeet, 2 examples, vi.36. YORKS, Bridlington, sandy cliffs, south side, v.34, a few; Ferriby, under bark of log embedded below high-water mark, iv.37. NORTHUMBERLAND, Alnmouth, at edge of sandy links, 12.iv.37. Also from Ireland (*J. Litster*).

Folsomia kingi sp.n.

With the exception of *F. caldaria* Axels., this is the largest species of the genus. *F. caldaria* is 3.0 mm. in length, and has the long abdominal bristles serrate, whilst the dentes are 2.5 times as long as the manubrium. Another species, *F. dentata* Fols., is 2.0 mm. in length, has the foot dentate and formed as in *kingi*, but the PAO is only one-third the basal width of the first antennal segment, whilst the dentes are only slightly (1.125—1.25) longer than the manubrium. Both *caldaria* and *dentata* are described as varieties (now raised to specific rank) of *fimetaria* and their manubrial chaetotaxy is as yet undescribed.

SCOTLAND: The species was first sent to me from the West of Scotland by Prof. F. A. L. King, after whom it is named, but the data have been mislaid. IRELAND: Holywood, near Belfast, 19.vii.37, in numbers under bark of conifer (*J. Litster*) (type and paratypes).

Subsection II. Ventral surface of manubrium with not more than four bristles on each side and situated within the distal half or thereabouts .... =*fimetaria* group.

(*a*) Size larger, length c.1.5 mm. Outstanding body bristles relatively long. Manubrium furnished with four strong distal setae on each side, three distal and one sub-distal. Dentes 1.8—2.0 times as long as the manubrium .... *F. fimetaria* Tullb.

(*b*) Size smaller, length 0.6—0.8 mm. Without noticeable outstanding body bristles. Manubrium furnished with three pairs of ventral bristles in the distal half or thereabouts, situated one above the other, the second pair being the most widely separated. Dentes about 1.3 times as long as the manubrium .... *F. litsteri* sp.n.

It should be noted that I am accumulating material of a third species of this subsection in which the outstanding body bristles are present, and which has manubrial bristles much as in *litsteri*.

Folsomia fimetaria Tullb.

The species I regard to be the true *fimetaria* has a somewhat long furca, the dentes being usually 1.8 to 2.0 times as long as the manubrium, and the ventral surface of the manubrium is furnished with four strong distal setae on each side — three distal and one subdistal. The PAO is elliptical, double-rimmed and 4.0 to 4.5 times as long as broad near middle and without median constriction of either margin.

This is the commonest species in Scotland, Ireland and the North of England, and would seem to be widely distributed.

(*To be concluded.*)

Editorial.

We deeply regret to announce that our Editor-in-Chief, Engineer-Commander James John Walker, M.A., R.N., F.L.S., F.R.E.S., passed away after a short illness on 12th January last. An appreciation of his services to entomology and a detailed account of his life will appear in our next number.

Meanwhile Dr. B. M. Hobby has kindly taken over his duties. In future all MSS. for publication should be sent to him at 7 Thorncliffe Road, Oxford.

TRIPHLEPS LAEVIGATA FIEBER (HEM., ANTHOCORIDAE) NEW TO BRITAIN.

BY HARRY BRITTEN, F.R.E.S.

In 1934 a female specimen of *Triphleps* from Delamere Forest, Cheshire, was handed to me by Mr. E. W. Aubrook and appeared to be quite different from any of the British species in my collection. When visiting Whixall Moss, Salop, in July, 1936, I took both sexes of this same species in fair numbers. I have recently taken the opportunity of a visit to the British Museum to investigate this new species.

In 1923 Dr. H. Ribaut of Toulouse (Bull. Soc. Hist. Nat. Toulouse, LI, pp. 522-538) published an excellent revision of the French species of the genus *Triphleps*, and reference to this work showed that the believed new species was actually *T. nigra* Wolff, while the species which had hitherto passed in Britain as *T. nigra* Wolff was really a mixture of *T. nigra* Wolff and *T. laevigata* Fieb.

T. laevigata Fieb. is, therefore, an addition to the British list. The following short description together with the revised key to the genus will enable collectors to identify their captures.

T. laevigata Fieber.

About same size as *T. minuta* L. (♂, 2.20 mm.; ♀, 2.25 mm.), that is, smaller than *T. majuscula* Reut., but larger than *T. nigra* Wolff.

Resembles *T. minuta* in general colour, but membrane has the apical half infuscate instead of uniformly whitish; the hind tibiae are also infuscate in both sexes instead of being pallid as in *T. minuta*.

Male slightly smaller and narrower than female; the antennae, especially the second segment, longer, much thicker and with longer pubescence.

REVISED KEY TO BRITISH *TRIPHLEPS* SPP.

1. Anterior and posterior angles of pronotum each with a distinct bristle-like seta .... 2.
— Anterior and posterior angles of pronotum devoid of bristle-like setae ... 3.
2. Intermediate tibiae generally pallid; membrane with the basal half pale; corium smooth .... *laevigata* Fieb.
— Intermediate tibiae infuscate in both sexes; membrane entirely infuscate; corium coarsely sculptured .... *nigra* Wolff.
3. Larger, usually above 2.6 mm.; pronotum in front not half as wide as at the base .... *majuscula* Reut.
— Smaller, seldom reaches 2.6 mm.; pronotum in front more than half as wide as at the base .... *minuta* L.

Ribaut has shown that these species can readily be distinguished by the male genitalia, but it will usually be found possible to identify British species on the above characteristics.

As far as I have been able to determine from the various collections available, the distribution of the species in Britain is as follows, but unfortunately I omitted to keep data for several of the collections examined.

Triphleps nigra Wolff :—Battle, 9.1901, E. P. Collett; Ascot, 8.1893; Deal, 23.8.1924, with larval and nymphal forms; Battle, 8.1881; New Forest, 8.1917; Albury Heath, 8.1892; Gomshall, 8.1892; Barton Mills, 6.10.1907, Butler collection; Weybridge, Birdbrook, Esher, Power collection; Crowthorne, 1.7.1930, from flowers of cross-leaved heath, twelve examples, J. Collins; Delamere, 8.9.1934, E. W. Aubrook; Whixall Moss, 8.7.1936, on heather in numbers, H. Britten; Oxshott, 29.9.1929; Benfleet, 15.7.1930, K. G. Blair.

T. laevigata Fieb. :—New Forest, 9.1917, larval forms; Symonds Yat, 18.8.1913; Chiltern Hills, Bucks, 8.1915; Colwyn Bay, 29.8.1912; Yarmouth, I. of Wight, 8.1911; Freshwater, I. of Wight; Brinton, Hereford, 8.1913; Hastings, 9.1878; Killarney, Co. Kerry, 24.3.1935 (Donisthorpe), Butler collection; Brighton, Birch Wood, Oxford, 16.7.1914 (H.B.), Power collection; Wytham, 11.7.1914; Yarnton, 29.7.1914; Tubney, 9.8.1933; Kirtlington Park, Oxon, 3.9.1933, J. Collins; Shotover, Oxon, 17.8.1914; Bayswater, Oxon, 29.5.1915; University Museum Grounds, Oxon, 15.7.1914; Brasenose, Oxon, 28.8.1915; Tewkesbury, Glos., 5.8.1935; Madeley, Staffs, 29.9.1935 (H. W. Daltry), H. Britten's collection; Dunwich, Suffolk, 6.1926; Kingsbridge, S. Devon, 1929; Niton, I. of Wight, 9.1931, K. G. Blair; Harpenden, 24.7.1937; Handley, Dorset, 4.10.1936, B. S. Williams.

Triphleps majuscula Reut. :—Battle, 9.1881, E. P. Collett collection; Fifield, 8.1892; Fritton, 8.1890; Alum Bay, I. of Wight, 21.8.1911; Cheshunt; Bury St. Edmunds, 9.1896; Hatfield, 9.1891; Corton, 8.1891; Hurst Green, 8.1882; Norfolk, 2.1918 (hibernating in apple), H. Main; Mundesley, 8.1898; Hastings, 9.1878; Burnham Beeches, 8.1893; Abinger, 8.1900; Chiltern Hills, Bucks, 8.1915, larval; Woodford, Essex, 28.8.1925, larval; Horsham Road, Sussex, 5.3.1924, larval; Brinton, Hereford, 8.1913, larval (these larval forms are probably doubtful at the moment); Herne Bay, 1900, determined by Saunders; Totteridge, 9.1891; Colwyn Bay, 29.8.1912; Chesterton, 4.8.1919 (G. E. Hutchinson); Cambridge, 4.9.1918 (G. E. Hutchinson), Butler collection; Cowley, Drayton, Walton-on-the-Naze, Quy Fen, Littlington, Bushey, Farnham, Mickleham, Ditchingham, Lewisham, Claygate, Power collection; Wytham, Berks, 9.7.1910; Water Eaton, Oxon, 20.7.1910; Yarnton, Oxon, 9.5.1909; Cothill, Berks, 1.8.1910, J. Collins; Thame Park, Oxon, 5.8.1915; University Museum Grounds, Oxon, 10.7.1914; Headington, Oxon, 12.8.1914; Shotover, Oxon, 9.8.1915; Brasenose, Oxon, 4.9.1915; Godstow, 12.8.1915; Goathland, Yorks, 4.5.1935, H. Britten; Harpenden, Herts, 26.8.1937; Wicken, 3.8.1937, B. S. Williams.

Triphleps minuta L.:—Abinger, 8.1899; Brimton, Hereford, 8.1913; Pett. 8.1902; Credenhall, Hereford, 8.1913; Mildenhall, 8.1919; Chiltern Hills, Oxon, 8.1918; Freshwater, I. of Wight; Broxbourne, 8.9.1910; Fifield, 8.1893; Ashburnham, 8.1894; Chobham, 8.1893 (det. by Saunders); Fleet, 8.1903; Rickmansworth, 15.8.1916; Woodford, Essex, 8.1925, Butler collection; Weybridge, Claygate, Cowley, Birch Woods, Ditchingham, Power collection; Weston-on-the-Green, 12.8.1914, J. Collins; Thame Park, Oxon, 6.8.1915; Headington Wick, Oxon, 16.6.1914; Great Salkeld, Cumberland, 11.11.1912; Pulford, Cheshire, 20.10.1934; Tewkesbury, Glos, 5.8.1935, H. Britten; Harpenden, Herts, 26.7.1937; Leighton Buzzard, 7.8.1937; Freckenham, 3.8.1937; near Chatteris, 1.8.1937; Wicken, 31.7.1937, B. S. Williams.

I wish to thank all those who have so generously placed the whole of their material at my disposal, and especially Mr. W. E. China for drawing my attention to the above revision of the genus, and also for allowing me free access to the collections in his care.

22 Birch Grove,
Levenshulme, Manchester, 19.
January 11th, 1939.

Odd Notes on Migrant Lepidoptera at Sea.—Acherontia atropos L.: June 9th, 1901, on board ship when on passage between Sardinia and Majorca; August 24th, 1901, on board ship when on passage from Malta to Gibraltar two days out from Malta, probably from North African coast; August 25th, 1901, on board ship: 'We have been within 8 or 10 miles of the African (Algerian) coast, so probably it came on board thence.' *Celerio lineata livornica* Esp.: May 1st, 1901, two examples caught on board ship when at sea between Patras and Malta; June 30th, 1902, one taken on board ship, probably from Cyprus—we had left Larnaka the previous morning. *Lymantria dispar* L.: July 16th, 1901, one male flew on board when at sea off Caprera Island, on passage from Rapallo to Malta. *Plutella maculipennis* Curt.: April 20th, 1902, found on board when at sea about 60 miles east of Cape Spartivento, Sardinia; very light easterly breeze, almost a flat calm. *Vanessa cardui* L.: November 6th, 1904, at Sawakim (Sudan), one at light on board ship at night, a wet, thundery evening.—T. Bainbrigge Fletcher, Rodborough Fort, Stroud, Glos.: *January 16th*, 1939.

Phlogophora meticulosa L. (Lepidopt.): emergence in December.—On December 28th last, with snow still on the ground, I found a freshly emerged Angle Shades moth (*Phlogophora meticulosa* L.) hanging on the side of my house. I put it under a glass with a few twigs, where its wings developed.—W. J. Watts, 42 Bramerton Road, Beckenham, Kent: *January 2nd*, 1939.

NEW AND ADDITIONAL HALIPLID RECORDS FOR EIRE AND SOME NOTES ON VARIATION IN BRITISH SPECIMENS OF *HALIPLUS FULVUS* F. (COLEOPT.).

BY THE REV. E. J. PEARCE, M.A., F.R.E.S.

Through the kindness of friends near Clonmel, Co. Tipperary, I have been enabled, often very hurriedly, to collect in some nine counties and vice-counties in Eire during the early part of last August. The vagaries of weather experienced during 1938, including the long drought and cold nights of the spring, will hardly permit of it being regarded as a good year for entomologists. Certainly, with some exceptions, water-beetles seem generally to have been below the average in number. When I was in Eire nearly all the localities visited were greatly flooded and correspondingly harder to work; this added further to the difficulty of securing material. Nevertheless some interesting finds were made, and it seems worth while publishing the new records that resulted. In the list of species (and notes thereon) which follows I have marked with an asterisk those which are new to the counties and vice-counties concerned. For this information I am largely indebted to Mr. E. O'Mahony. I have used the customary county and vice-county symbols, and have also given each its appropriate number (in parenthesis) according to the printed typo-map numeration, supplementing this when necessary.

In the case of *H. fulvus* F. and *lineatocollis* Marsh., Johnson and Halbert (5; these numbers refer to the list of references) only state that these two species are 'common'; there is, therefore, need for definite locality particulars for both of them. All the records here given are of course additional to my two previous notes on the same general subject (7 and 8). For convenience I have divided these notes into three sections: (1) List of species and notes thereon; (2) Variation in British specimens of *H. fulvus* F.; (3) List of references.

(1) LIST OF SPECIES AND NOTES THEREON.

Brychius elevatus Pz. 4.viii.38, R. Lee, near Macroom (146b).* My numbered typo-map only divides Co. Cork into North (146) and South (147). I have, therefore, had to number Co. Mid-Cork 146b.

Haliplus obliquus F. 12.viii.38, Grand Canal, near Hazelhatch, DU (124). This is only just in DU; the KD (125) boundary is very close. Elsewhere (7, p. 45, and 8, pp. 229-230) I have referred to the pale race of this species which occurs (apparently to the total exclusion of the normal form) in Lough Derg at stations both in

NT (143) and SG (140). As yet I have not been able to collect along the CL (141) shore of the lough. This last year (1938) owing, I think, to the further considerable rise in the level of the water of the lough and the consequent total disappearance of true aquatic vegetation (*e.g.* its favourite *Chara*), this species was very hard to find, but eventually three specimens, all of the same pale race, were secured. It is interesting to note that a single specimen taken on 11.viii.38 in the R. Shannon itself at Belle Isle jetty, near Portumna (in NT 143), is in every respect perfectly normal, and is, therefore, not like the specimens taken in the lough itself, at a station less than half a mile away from the jetty. Though the L. Derg specimens vary among themselves to some extent, I have so far failed to find in this area any specimens forming a transition between the pale and the normal.

H. confinis St. 7.viii.38, L. Ballyscanlan, WA (145); 5.viii.38, L. Leane, near Killarney, NK (148 a, I have distinguished Kerry North and South as 148 a and 148 b); 9-10.viii.38, L. Derg, near Carrigahorig, NT (143). I have already recorded (8, p. 231) this species from L. Derg, but on this occasion (amongst a series much less variable than the Killarney one) I took a specimen very suggestive of the '*pallens*-race' which is well known as occurring in Loch Leven, KF (85), to the exclusion of the type. The two specimens from L. Ballyscanlan tend towards the other extreme of colour-variation, and are abnormally dark. I may add that I failed to take any of the very dark specimens at Killarney to which Mr. Bullock has referred (2).

H. flavicollis St. 7.viii.38, lake, Stonehouse, near Kilmeadan station, WA (145)*; 12.viii.38, Grand Canal, Hazelhatch, DU (124); 10.viii.38, Portumna Canal (really little more than a long backwater of the R. Shannon), SG (140).

H. fulvus F. 7.viii.38, Knockaderry Reservoir, WA (145); 10.viii.38, Portumna Canal, SG (140); 5.viii.38, Upper Lake, Killarney, NK (148 a); 4.viii.38, L. Gouganebarra, WC (147); 5.viii.38, Cloonee Loughs, near Kenmare, SK (148 b). The specimens from this last locality merit special mention in that (with the exception of one specimen only) they are destitute of the normal black elytral markings, and are of a beautiful rust-red colour very similar to that of *H. rubidus* Perr. The *fulvus* was the dominant insect in the loughs, and hundreds could have been taken. I refer to these specimens more fully in Section (2) of these notes.

H. fluviatilis Aub. 5.viii.38, R. Blackwater, Mallow, and 4.viii.38, R. Lee, near Macroom, both MC (146 b).*

H. lineolatus Mann. (=*nomax* B.-Browne). 4.viii.38, L. Gouganebarra, WC (147)*; 10.viii.38, Portumna Canal, SG (140)*; 4.viii.38, R. Lee, Macroom, MC (146b); 5.viii.38, L. Leane, Killarney, NK (148 a); and 12.viii.38, Grand Canal, Hazelhatch, DU (124).

H. lineatocollis Marsh. 11.viii.38, ditches near Portumna, NT (143); 4.viii.38, L. Gouganebarra and L. Inchigeelagh, and R. Ouvane (or Owvane), WC (147); 5.viii.38, Cloonee Loughs, SK (148 b); and 5.viii.38, L. Doo, NK (148 a).

I stated previously (8, p. 229) that with reference to L. Derg I knew 'of no published records referring to' its insect fauna other than those I there cited. I have since found that I overlooked a record of *H. flavicollis* St. for that locality in (5).

Of the nine species of Haliplidae already recorded (1) for North or South Kerry, or both, I did not find *obliquus* F. (an old record), *flavicollis* St., *fluviatilis* Aub., or *immaculatus* Gerh. This is not surprising considering the very limited nature of my visit, and that I only collected in four localities in Co. Kerry altogether.

(2) Variation in British specimens of *H. fulvus* F.

The Cloonee immaculate ferruginous specimens raise the question as to the limits of variation in the British examples of this species. For some time I have been gathering material for its study, partly because of questions raised in my mind as the result of Dr. Guignot's work (3) on the *fulvus*-group, and partly because I was sceptical (and still am) as to the specific distinctness of *H. lapponum* Th. I have now examined over four hundred British specimens of *fulvus* from over forty counties and vice-counties. I have also seen specimens from the Continent, Scandinavia, etc. I also possess three specimens sent to me as *lapponum* Th. (one from Lapland, coll. O. Leonhard; one from Konsberg, Norway, ex coll. and det. P. de Peyerimhoff; and one from Lac d'Ayous, ex coll. and det. as var. *carlittensis* Rég. by Dr. Guignot). It is of course impossible to consider the variation of our British examples without some reference to their place within the whole European orbit of the species; therefore some reference has to be made to *lapponum*, but in so doing it must be understood that this does not constitute, on my part, recognition of *lapponum* as a good species. I still do not think it is, but I wish to have further opportunity for the examination of Continental material before I refer more fully and definitely to this subject. I may here quote some remarks of Dr. Guignot made to me in a letter as the result of my sending him one of the Cloonee immaculate *fulvus*: 'Après avoir examiné votre *Haliplus* je vous dirai que personellement je le placerais de préférence dans le *lapponum* que dans le *fulvus,* mais en réalité il est intermédiaire aux deux espèces, ce qui tendrait à confirmer votre opinion que le second n'est qu'une sous-espèce du premier. Les caractères que j'ai indiqués dans mon ouvrage ne se présentent pas toujours avec leur maximum de netteté, et sont un peu variables, c'est ce qui m'incite à me rapprocher de votre avis.'

So far as British specimens are concerned I note only two markedly distinct departures from typical *fulvus* :—

(*a*) Immaculate ferruginous specimens. Until my visit to the Cloonee loughs I had never myself taken any such specimens, but I have in my collection two examples very like these, from Palling, Norfolk East (ex coll. F. Balfour-Browne), and I have the following non-British examples: two from Orebro, Sweden (coll. Janson and Nyholm); one from the Harz Mountains, Germany (coll. Schenkling); and one from Heinersdorf, Germany (coll. Rottenberg). As I have already stated, *fulvus* was abundant in the Cloonee loughs at the time of my visit, and literally hundreds of specimens could have been taken. Only one 'typical' specimen was seen there, and there seemed to be no intermediates. It is of course not unusual to take occasional specimens that show some reduction of the characteristic black markings on the elytra; what is unusual, in my experience, is to find a local race from which they are entirely absent.

(*b*) Completely melanic examples. I have only seen one of these, a very remarkable specimen, ex coll. T. T. Macan, 11.x.36, Podnet Tarn, Lake district, WL.

H. fulvus, therefore, so it seems, as perhaps we would expect, is a less variable species with us than it is on the Continent of Europe. Some six or so varieties of it have been described by Guignot (3, 4) and Zimmermann (9). It is not altogether fortunate, in my opinion, that they have been given names, but, curiously enough, none of these exactly seems to fit either of the two extremer forms of variation amongst Britannic specimens that I have recorded here.

(3) LIST OF REFERENCES.

(1) BALFOUR-BROWNE, F. 1934. 'The aquatic Coleoptera of North and South Kerry.' Ent. Mon. Mag., LXX, pp. 28—37.

(2) BULLOCK, E. 1928. 'Coleoptera from the Killarney District of County Kerry, Ireland.' Ent. Mon. Mag., LXIV, pp. 102--4.

(3) Guignot, F. 1928. 'Notes sur les *Haliplus* du groupe *fulvus* F. [Coleopt. Haliplidae].' Ann. Soc. Ent. Fr., XCVII, pp. 133—51.

(4) ———— 1931—33. 'Les Hydrocanthares de France.' Toulouse.

(5) Johnson, W. F., and Halbert, J. N. 1902. 'A list of the beetles of Ireland.' Proc. R. Irish Acad., 3rd Ser., Vol. VI, No. 4, pp. 535—827.

(6) O'Mahony, E. 1929. 'Coleoptera,' in Praeger, R. L., 'Report on recent additions to the Irish fauna and flora (terrestrial and fresh-water).' Proc. R. Irish Acad., XXXIX, B, pp. 22—37.

(7) Pearce, E. J. 1936. 'New Haliplid records for Southern Ireland.' Ent. Mon. Mag., LXXII, pp. 44—6.

(8) ———— 1937. 'Notes on, and additional records for, some Irish Haliplidae (aquatic Coleoptera), with special reference to Lough Derg.' Irish Nat. J., VI, pp. 228—31.

(9) Zimmerman, A. 1924. 'Die Halipliden der Welt,' Ent. Bl., XX, pp. 1—16, 65—80, 129—44, 193—213.

House of the Resurrection,
Mirfield, Yorks.
January 12th, 1939.

NEW MYRMECOPHILOUS STAPHYLINIDAE (COL.) FROM EAST AFRICA.

BY MALCOLM CAMERON, M.B., R.N., F.R.E.S.

Doryloxenus henningsi sp. nov.

Shining, the fore-parts pitchy black; the front of the head, margins of the thorax and posterior margin of the elytra narrowly translucid and yellowish; abdomen dark reddish-brown, towards the apex lighter. Length 1.5—1.75 mm.

A little smaller and narrower than *hirsutus* Wasm.; darker in colour, without trace of ground sculpture; the elytra at the suture a third shorter than the thorax, with similar very fine scattered punctures, which, however, are much more sparing on the elytra than in *hirsutus*. The abdomen, as in *hirsutus*, is furnished with long yellow setae, but the fine puncturation and yellow pubescence seen in that species is much more sparing, being limited to the sides of the segments, the middle being glabrous.

Nyasaland: Ngerengere.

Demera (s.str.) **henningsi** sp. nov.

Moderately shining, head black, thorax and abdomen light chestnut-red, the latter infuscate before the apex; elytra brownish-yellow. Antennae with the last four or five joints blackish, the rest and the legs reddish-yellow. Length 1.75—2 mm.

In build and in the long black abdominal setae resembling *setosa* Cam., but of brighter colour and with much larger and deeper thoracic impressions, the head much more finely punctured; more shining and more brightly coloured than *subrugosa* Cam. and scarcely as roughly punctured, but with larger and deeper thoracic impressions, suborbicular head and long abdominal setae. Head narrower than the thorax, transversely suborbicular, convex, the eyes about as long as the post-ocular region, finely and closely punctured, finely coriaceous.

Antennae with the third joint a little shorter than the second, fourth small, as long as broad, fifth to tenth gradually more transverse, the penultimate about three times as broad as long, the eleventh as long as the three preceding together. Thorax transverse (3.5 : 2.75), widest behind, the sides gently rounded and retracted towards the rounded anterior angles, the posterior angles distinct, obtusely rounded, along the middle sometimes with trace of a fine impressed line, on each side of the middle in the posterior half broadly and deeply excavated, the posterior margin before the scutellum strongly elevated and thickened, the area in front transversely impressed, moderately closely, moderately finely, roughly punctured, very finely coriaceous. Elytra longer (3.5 : 2.75) and broader (5 : 3.5) than the thorax, widened behind, the sculpture very similar. Abdomen a little narrowed at the base, more so towards apex, finely, moderately closely punctured, rather more closely on the penultimate segments, the first four visible segments each with six long black setae in a transverse row across the middle.

NYASALAND: Ngerengere. With *Anomma nigricans molesta* Gerst.

Zyras (Homalodonia) henningsi sp. nov.

Rather shining light reddish-brown, the last three abdominal segments blackish. Antennae with the first joint reddish-yellow, the following reddish. Legs reddish-yellow. Length 5 mm.

Near *kenyae* Bernh., but differently coloured; the antennae very similarly constructed, but with the tenth joint a little shorter; thorax a little longer, both it and the elytra more closely and less finely punctured; the sculpture of the abdomen as in *kenyae*. Head strongly transverse, distinctly broader than the thorax; the eyes very large, occupying nearly the whole side; the front and along the middle narrowly impunctate, elsewhere rather closely covered with small obsoletely umbilicate punctures and without ground sculpture. Antennae rather long and stout, the third joint a little longer than the second, fourth to ninth all a little longer than broad and differing but little, the tenth longer than the ninth, the eleventh as long as the ninth and tenth together. Thorax as long as broad, the sides rounded in front, sinuately retracted behind, the posterior angles obtusely rounded, before the scutellum with transverse fovea, the base narrowly bevelled and very finely punctured, in some examples with indication of an oblique lateral impression towards the sides; punctuation rather close, fine and asperate; ground sculpture wanting. Elytra a little longer and distinctly broader than the thorax, broader than long, more finely and less closely punctured; ground sculpture absent. Abdomen a little narrowed towards the apex, with sparing asperate punctures furnished with long black setae, the first visible segment only very finely and rather closely punctured; ground sculpture absent; seventh tergite without lateral sulcus; sixth ventral segment produced narrowed and truncate.

NYASALAND: Ngerengere. With *Anomma nigricans molesta* Gerst.

Zyras (Acrothoraconia) reichenspergeri sp. nov.

Fore-parts moderately shining; head black, thorax and elytra pitchy-brown; abdomen shining, the first two segments brownish-yellow, the following blackish. Antennae blackish, the first two joints yellowish-brown. Legs reddish-yellow. Length 4 mm.

Near *mutatus* Cam.* but smaller and narrower, the head much less finely punctured and with much stronger ground sculpture, thorax narrower, more roughly punctured and with distinct ground sculpture. Head transverse, as broad as the thorax, the eyes very large, moderately closely punctured except along the middle and in front, the punctures superficial and somewhat umbilicate, the ground sculpture distinct and coriaceous. Antennae long and rather stout, extending to the posterior margin of the elytra, the third joint longer than the second, fourth to tenth all longer than broad, decreasing in length, the penultimate only slightly longer than broad, the eleventh as long as the ninth and tenth together. Thorax transverse (6.5 : 5), the sides gently rounded in front, straighter and more retracted behind, the posterior angles obtuse; along the base and sides almost to the anterior angles with a sharp keel, so that a narrow bevelled surface is formed between it and the margins; before the scutellum with a fovea, along the sides obliquely and strongly impressed, puncturation rather close, moderately fine and rough, distinctly coriaceous; the bevelled edges much more finely punctured. Elytra slightly longer and distinctly broader than the thorax, transverse, coarsely, closely and roughly punctured. Abdomen a little narrowed towards the apex, the seventh tergite with a lateral sulcus, with a few minute, scarcely perceptible punctures and extremely finely coriaceous ground sculpture, glabrous. Fore parts with a fine, scanty pubescence.

---

* This species was placed in the sub-genus *Grammodonia*, but should be removed to *Acrothoraconia*.

♂. Third tergite with a tubercle in the middle; seventh with a sharper tubercle in the middle and some small granules along the posterior border; eighth truncate, finely denticulate, the surface closely covered with small granules.

NYASALAND: Ngerengere. With *Anomma nigricans molesta* Gerst.

The types of all these species are in the collection of Dr. Reichenspergeri and paratypes in my own.

15 Teesdale Road,
Leytonstone, London, E.11.
January 16th, 1939.

An unusual association of Apions.—On the afternoon of the 9th September last, when walking down to Chingford from High Beach through the fields which border Epping Forest, the weather being rather chilly, with a grey sky and cold wind, I noticed in one of them some large patches of thistles. Happening to be in want of a few fresh specimens of the common thistle Apion, *A. carduorum*, I set to work to beat them over paper (having no net with me), but without result till I reached the hedge separating the field from an adjoining one, where a few very stunted and straggly ones were growing amongst brambles and nettles under the shelter of the hedge. Beating these produced some very unexpected results, as several specimens of *A. spencei*, a species I had been looking for unsuccessfully for forty years, turned up, together with a few each of *A. unicolor*, *A. trifolii* and *A. humile*, but curiously neither of the two species usually found on thistles, *A. carduorum* and *onopordi*, put in an appearance. Some of the *spencei* turned out to be damaged, and wishing to get some more of it I paid two further visits to the spot, on September 13th (a very hot day) and October 11th (after a period of wet weather), finding Apions present on each occasion; and altogether from these few thistles under the hedge I obtained twenty-one *A. spencei*, fourteen *unicolor* (all ♀'s but two), one *ervi*, two *assimile*, three or four *trifolii*, one *nigritarse* and six *humile,* together with (on the later visits) a few *carduorum* and a single *onopordi,* nine species in all. The large patches of thistles out in the field produced nothing on any of the visits, nor did the surrounding herbage under the hedge.

As Coleopterists are aware, *A. spencei, unicolor* and *ervi* live normally on species of *Vicia* and *Lathyrus,* the three red-legged species on clover and *humile* usually in grassy places where sorrel is growing. While there is plenty of the latter in the surrounding district, the other plants, especially vetches, are decidedly scarce; there are a few small scattered plants of *Lathyrus* growing annually amongst grass in an adjoining field, but they have never produced anything, nor have some small patches of another species of vetch in a lane about half a mile away. At present, therefore, it is rather a mystery to me where such an assemblage could have come from, but further investigations next summer may throw some light on this point, and in the meantime I have thought the incident worth recording.—F. B. JENNINGS, 152 Silver Street. Upper Edmonton, N.18: *January 4th,* 1939.

British Museum (Natural History), Department of Entomology: a suggestion to students.—As an unofficial worker of some years' standing in the Entomological Department at the British Museum (Natural History), South Kensington, I feel that the attractions of this work deserve to be better known than they are to keen students of insects.

The entomological collections at South Kensington are now so large that the members of the regular staff can deal only with a comparatively small part of the material at their disposal, and many families of insects are perforce quite unworked. There are unlimited opportunities here for entomologists who have leisure time at their disposal, who are interested in the classification of insects and would be prepared to specialise in one family or even genus of insects, to do extremely useful work.

The first few months might prove not very encouraging, as they would have to be devoted to obtaining an outline of the group and of its literature and to the incorporation of accessions into the collection. The worker would have to be prepared to accept criticism and patiently to acquire at the same time a knowledge of Museum routine methods. He or she will, however, be doing useful work from the start, discounted only by the amount of help and supervision required from the regular staff during the initial stages.

In a period of time, which will vary with the individual and the group studied, a stage will be reached when serious scientific work can be attempted, and, with the unmatched facilities provided by the collections and library in the Museum, such work is of absorbing interest. If the group chosen has been little studied in the past, as is the case with so very many, and not too large, a keen and suitable worker will quickly find him or herself regarded as the recognised specialist on that group, after which, with a tiny section of the national collection virtually in his or her own charge, many happy hours may be anticipated. It must be pointed out, however, that such employment carries little or no financial benefit, and is possible only for those with some private means or who have retired from business. Any reader, resident in the London area, who feels that he or she might now, or in the future, be available for such work should make further enquiries from the Keeper of the Department.

[Though the staff of the Department is glad to welcome help of the kind suggested, I should like to make it clear that this paragraph has been in no way inspired by the Department.—K. G. BLAIR, Deputy Keeper.]

Obituary.

Dr. Charles Joseph Gahan.—We regret to have to report also the death of Dr. C. J. Gahan, M.A., D.Sc., F.R.E.S. Dr. Gahan was born on 20th January, 1862, at Roscrea, Co. Tipperary, and was educated at Queen's College, Galway, and the Royal School of Mines, South Kensington. In 1886 he entered the British Museum (Natural History) and in 1913 was appointed Keeper of the newly formed Department of Entomology. Though an entomologist of wide interests, he studied mainly the Coleoptera, particularly the Phytophaga, the Elateridae and especially the Longicorns, his most important work being the volume on the Cerambycidae in the Fauna of British India series. He was Hon. Secretary of the Entomological Society of London in 1899 and 1900, and President in 1917—1918.

Since his retirement in 1927 he had lived at The Mount, Aylsham, Norfolk, where he died after a long illness on 21st January.

Society.

Entomological Club.—A meeting of the Entomological Club was held at Florence House, Heston, on 14th December, 1938, Mr. H. St. J. K. Donisthorpe in the Chair.

Members present in addition to the Chairman: Mr. H. Willoughby Ellis, Mr. Jas. E. Collin, Dr. Harry Eltringham, Mr. R. W. Lloyd, Mr. W. Rait-Smith. Visitors present: Dr. K. G. Blair, Dr. Malcolm Burr, Dr. Karl Jordan, Mr. W. H. T. Tams.

The meeting was called for 7 o'clock and supper was served at 7.30. After supper the Chairman showed a living female of *Formica fusca* L. which was sent with ten of her workers by air from the Orkneys in September last. The workers had died, but the queen was alive when the consignment arrived. This is the first record of this ant from the Orkneys. These islands, including the Shetlands, had been worked before for ants, the only record being *Myrmica ruginodis* Nyl. The late Rev. F. D. Morice had specially worked the Shetlands and Orkneys, the late J. Waterson the Shetlands, and Mr. J. R. le B. Tomlin the Orkneys without success. Before the above records the most northernly range for *F. fusca* in the British Isles was Sutherland.

The Chairman also exhibited a living larva of *Ctesias serra* F. (Col.), taken in Windsor Forest in oak bark on June 26th, 1936. It was in good condition and had been well fed, but had shown no inclination to pupate up to the date of the exhibit.

Mr. J. E. Collin exhibited specimens of the two blow-flies *Calliphora germanorum* Villen. and *C. uralensis* Villen., which are found in this country only in the north of Scotland, the former not uncommon north of the Grampians, and the latter known only from the island of St. Kilda and the neighbourhood of Tongue (Sutherland). Both are very little known on the Continent, though possibly overlooked owing to their close general resemblance to the other two very common species. *C. germanorum* was described from specimens found in Prussia, and *C. uralensis* from Zlatonst (E. Russia) and Lapland, but the latter has since been found to be *the* common blow-fly of West Greenland and to occur on the Murmansk Coast of North Russia and in Iceland, while the specimens exhibited were captured by the exhibitor at Loch Hope, near Tongue, in July of last year.

A very pleasant evening was spent and the meeting broke up about 11 o'clock, the members and guests wending their way home with difficulty in the thickest fog of the year.—H. WILLOUGHBY ELLIS, *Hon. Secretary.*

ADDITIONS TO THE BRITISH HOMOPTERA.

BY W. E. CHINA, M.A.

Although only a few months have elapsed since the publication of my list of corrections and additions to the British Homoptera, the activity and enthusiasm of Messrs. B. S. Williams and P. Harwood have already resulted in the list being out of date. Apart from *Neophilaenus longiceps* Put., already brought forward by Mr. Williams himself (E.M.M., Sept., 1938, p. 201), several new species have been discovered, the majority of which were recognised as such by the collectors. I have been asked to record these and propose to commence with the Delphacidae.

Fam. DELPHACIDAE.

Genus *Eurysa* Fieber.

Eurysa Fieber, Verh. zool.-bot. Ges. Wien, 1866, p. 520, t. 8, f. 9; Rev. Zool., 1875, p. 374, 1876, t. 7; Melichar, Cicad. Mitteleuropa, 1896, p. 67; Haupt, Die Tierwelt Mitteleuropas IV, 3, Homopt., 1935, p. 137.

On June 5th, 1938, Messrs. Bedwell and Williams collected at Wicken Fen, Cambridgeshire, a series of a small blackish Delphacid. Williams, thinking it to be a new species of *Criomorphus,* sent specimens to Dr. H. Ribaut, the celebrated French Homopterist, who kindly identified it as *Eurysa lurida* Fieb. This species might certainly be confused with *Criomorphus pteridis* as regards generic characters, since the latter has the two frontal keels in the male very indistinct, especially at the forehead, while the forking of the keel on the forehead of *Eurysa lurida* appears to arise from two obsolescent carinae. In those species of *Criomorphus* in which the frontal keels are evanescent at the base, the two keels are readily distinguishable at apex of frons, *i.e.* towards clypeus, whereas the apex of the frons in *Eurysa* bears only a single keel. Using (with modification) Edwards' key to the British Delphacidae, the genus *Eurysa* runs down as follows :—

Basal segment of antennae much shorter than second. Frons with only one middle keel forking on forehead. Side keels of pronotum curving outwards, not reaching hind margin. Crown not longer than wide, transverse. Veins of tegmina without large dark granules. The single median keel of face evanescent at least towards base of face before union with keels of crown.

Eurysa lurida Fieb. (Fig. 2d).

Eurysa lurida Fieber, Verh. zool.-bot. Ges. Wien, 1866, p. 523, t. 8, f. 9.

Eurysa brunnea Melichar, Cicad. Mitteleuropa, 1896, p. 68.

Male.—Shining black with the head olive-brown, paler on vertex; antennae and legs pale olive-brown, palest on hind tibiae and tarsi. *Female* pale olive-brown, darker on frons and dorsum of abdomen (except apex, which is paler. with the anal style whitish); hind tibiae and tarsi very pallid.

Frons strongly convex, shining, middle keel absent or obsolescent, becoming visible as a fork on to vertex; apical impression in fork and basal impressions of vertex shallow but reasonably distinct. Pronotum with two smaller rather indistinct shallow pits in the middle between the lateral keels, the very indistinct middle keel passing between these two pits. Mesonotum with the keels, especially the middle keel, absent or scarcely distinguishable. The opaque tegmina (sub-hyaline in ♀) not reaching middle of abdomen, apically truncate with rounded angles; abdominal connexivum with some long slender whitish hairs. Male genitalia figured (Fig. *2d*).

Length: male 2.5 mm., female 3 mm.

E. lurida occurs in S. France, Germany, Austria, Hungary and Tunisia. It is evidently a Mediterranean species which extends northwards into Europe. Haupt records it from *Calamagrostis epigeios* in pine woods, but as stated above the British specimens were taken in Wicken Fen.

This new British species is readily distinguished from *Criomorphus pteridis* Boh. by the much darker head and entirely dark pronotum. The tegmina are much shorter and the female is paler than *C. pteridis*. The genitalia are of course quite distinct.

Eurysa douglasi (Scott) (new combination).

Liburnia douglasi Scott, Ent. Mon. Mag. 7, pp. 28 and 72, 1870.

This already known British species is closely related to *E. lurida* Fieb. and should be transferred from *Delphacodes* (*Liburnia* auct.) to *Eurysa*.

The three British species of *Eurysa* can be separated as follows:—

Eurysa Fieb., 1866.

1. Face, at least on apical half, dark brown with pale spots .... 2.
— Face uniformly olive-brown .... *lurida* Fieber.
2. Scutellum brown .... *douglasi* Scott.
— Scutellum pale with dark stripes .... *lineata* Perris.

Genus *Criomorphus* Curtis.

Criomorphus Curtis, Guide Brit. Ins. VII, p. 194, 1831; Ent. Mag., I, p. 195, 1833.

Stiroma Fieber, Verh. zool.-bot. Ges. Wien, 1866, p. 521; Rev. Zool., 1875, p. 38, 1876, t. 8. Edwards, Hem.-Hom. Brit. Is., 1896, p. 73, t. 1, f. 21. Haupt, Die Tierwelt Mitteleuropas IV, 3, Homopt., 1935, p. 138.

Ditropis Fieber, op. cit., t. 8, f. 18, 1866.

Eurybregma Scott, Ent. Mon. Mag. 12, p. 92, 1875.

In my paper, 'Corrections and additions to the British Homoptera,' I overlooked the fact that the name *Stiroma* is a synonym of the older *Criomorphus*. The latter therefore takes priority and must be used for this genus.

Criomorphus moestus (Boh.) (Fig. 1a).

Delphax moesta Boheman, Kongl. Svenska Vet.-Ak. Handl., 1847, p. 59.

Delphax thoracica Stål, Ofv. Vet. Ak. Förh., 1858, p. 356, syn. nov.

Delphax moesta Flor, Rhynch. Livland, Dorpat., 1861, p. 80.

Ditropis moesta Fieber, Verh. zool.-bot. Ges. Wien, 1866, t. 8, fig. 18.

Stiroma borealis (*maesta*) Edwards, Hem. Hom. Brit. Is., 1896, p. 74.

There has been considerable confusion over this species. It was introduced to the British list by Scott without locality. A male specimen labelled *S. moesta* in the British Museum collection and formerly in Scott's collection is identical with *C. albomarginatus* Curtis (Fig. 1b), but according to Edwards in 1896 there was a male specimen of the true *S. moesta* in that part of Scott's collection which belonged to Mr. P. B. Mason of Burton-on-Trent. The claim of *C. moestus* to a place on the British list therefore rested on this specimen, which is presumably no longer available. On June 29th, 1932, Dr. O. W. Richards collected at Slough, Bucks, a series of a *Criomorphus* species which by means of Edwards' key I identified as *C. moestus* (Boh.). On May 23rd, 1938, Mr. B. S. Williams collected a long series of this same species at Harpenden, Herts. Later Mr. H. Britten pointed out that the Harpenden species was quite different from the species which he had in his collection under *C. moestus*, and sent to me a brachypterous male from Melkinthorpe, Westmorland. This proved to be identical with a macropterous male also collected by Britten in Westmorland (Cliburn Moss) from the J. Edwards collection and identified by Edwards as *C. moestus*.

Examples of the Harpenden and Westmorland species were sent to Dr. H. Ribaut, who expressed the opinion that Britten's Westmorland species was the true *C. moestus* (Boh.), and that Williams' Hertfordshire species was either a new species or *C. thoracicus* (Stål), probably the former, since the Hertfordshire species appeared to differ from *C. thoracicus* (Stål) in the dark brown legs. Consequently typical specimens of *C. moestus* (Boh.), *C. thoracicus* (Stål) and *C. borealis* (J. Sahlb.) were borrowed from the Stockholm Museum by the kind permission of Prof. Dr. O. Lundblad. All the five typical specimens of *C. moestus* which were sent turned out to be *C. albomarginatus* Curt., while the type of *C. thoracicus* (Stål) was identical with the Westmorland species. *C. borealis* (J. Sahlb.) (Fig. 1c), which had hitherto been regarded by Oshanin and other authors as synonymous with *C. moestus*, was quite a distinct species and apparently does not occur in Britain. It was at first thought that *C. moestus* (Boh.) was synonymous with *C. albomarginatus* Curtis, but Dr. Ribaut pointed out that since *C. moestus* (Boh.) was described from a single female specimen it was impossible to identify it. It is therefore necessary to accept the identification of the reviser who first made the species recognisable. This was Fieber (Verh. zool.-bot. Ges. Wien, 1866, taf. viii, fig. 18), who gave a fairly good figure of the male genitalia. This figure almost certainly represents *C. thoracicus* (Stål), which therefore becomes a synonym of *C. moestus* (Boh.). The Slough and Harpenden insect collected by Richards and Williams is therefore a new species. Before describing it I propose to redescribe *C. moestus* (Boh.) for the benefit of British collectors :—

Brachypterous male.—Head, antennae and legs brownish-yellow; pronotum and metanotum whitish; tegmina shining black with the apices moderately broadly whitish; abdomen shining black, the connexivum with traces of yellow, posterior margin of the eighth tergite narrowly yellow, the posterior margin of pygophor broadly whitish and its lateral margins narrowly whitish. Lateral keels of frons internally and median keels externally obscurely infuscate. Frons about 1⅔ times as long as wide, lateral margins lightly convex, the median keels obtuse, convergent at apex, evanescent towards base; apical impression between base of frontal carinae and basal impressions of vertex very shallow but reasonably distinct. Mesonotum with the keels very indistinct. Tegmina opaque, extending only on to base of abdomen, apically broadly rounded. *Macropterous male* similar to brachypterous form, but mesonotum shining black with carinae obsolete. Tegmina three-fourths longer than abdomen.

Male genitalia figured (Fig. 1*a*).

Length: macropterous male 4.2 mm., brachypterous male 2.4 mm.

C. moestus (Boh.) is recorded from Sweden, Finland, France, Germany, Austria, Northern and Central Russia. It is evidently a boreal and alpine species, occurring only on the uplands of Northern Britain.

It is closely allied to *C. albomarginatus* Curtis (Fig. 1b) but is readily distinguished apart from the male genitalia by the evanescent keels at base (distant from clypeus) of frons.

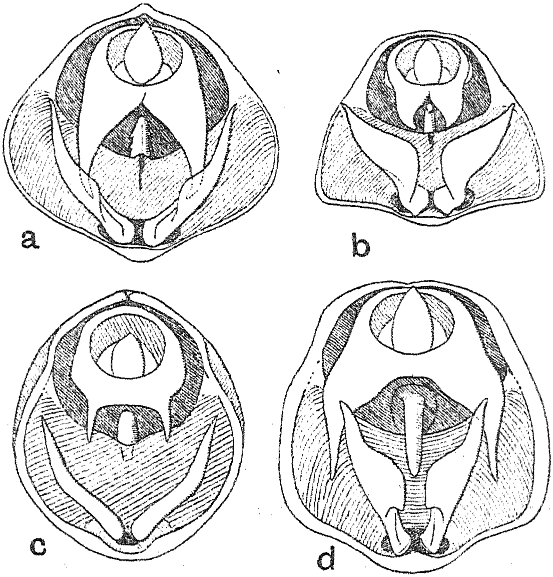


FIG. 1.—Terminal view of male genitalia of (*a*) *Criomorphus moestus* (Boh.) (=*thoracicus* Stål); (*b*) *C. albomarginatus* Curtis; (*c*) *C. borealis* (J. Sahlb.); (*d*) *C. williamsi* sp.nov.

Criomorphus williamsi sp. nov. (Fig. 1d).

Brachypterous male.—Head ferruginous brown with the keels of clypeus and frons yellowish-white; areas between the frontal keels margined with black, the area between middle keels of frons often entirely black; the clypeus between keels, and also the cheeks, black; basal antennal segment fuscous, the second segment sordid yellow; eyes ferruginous to black. Pronotum whitish with anterior margin behind vertex more or less broadly ferruginous. Mesonotum brown with lateral margins whitish, a triangular dark brown or black spot at base on each side of middle. Tegmina subhyaline, ferruginous brown with the apical margins broadly white. Legs black or dark brown with extreme apices of femora and tibiae and the spines of tibiae and tarsi whitish. Abdomen shining black with yellowish spots on connexivum and in middle of posterior margin of tergites; the posterior margin of penultimate tergite and apical margins of the pygophor (broadly on dorsal side) whitish. Apical halves of parameres and of teeth of anal tube fulvous.

Frons about 1½ times as long as wide, the lateral margins strongly convex, the keels broad and distinct throughout, the median pair convergent just before the apex; no apical impression, but basal impressions of vertex very shallow though distinct. Mesonotal keels present but indistinct. Tegmina subhyaline, extending only on to base of abdomen, apically truncate with angles rounded.

Genitalia figured (Fig. 1*d*).

Length 2.9 mm.

Macropterous male.—Similar to brachypterous form, but mesonotum black, the area between lateral keels dark brown; median keel obsolete, lateral keels scarcely visible. Tegmina extending about one-third their length beyond apex of abdomen, greyish hyaline with veins yellow, the costal margin on apical half infuscate.

Length 4.1 mm.

Brachypterous female.—Similar to male, but larger and broader; generally paler, except frons; the mesonotum sordid white without darker markings, the tegmina pale yellowish-brown, more transparent; the abdomen yellowish-brown, becoming paler towards apex, the posterior margins of basal segments pallid; tip of ovipositor blackish.

Length 3.9 mm.

Macropterous female.—Identical in colour to macropterous male and much darker than brachypterous female.

Length 4.9 mm.

Habitat:—HERTFORDSHIRE, Harpenden: 10 brachypterous ♂♂ (including type in Brit. Mus.), 8 brachypterous ♀♀, 5 macropterous ♂♂ and 8 macropterous ♀♀, 23.v.1938 (B. S. Williams), in coll. British Museum and B. S. Williams.

BUCKINGHAMSHIRE, Slough: 3 brachypterous ♂♂ and 2 brachypterous ♀♀ 'in grass in wet field,' 2.vi.1932 (O. W. Richards); in collection of British Museum (Nat. Hist.).

The British species of *Criomorphus* can now be separated as follows:—

Criomorphus Curtis, 1831.

1. Keels of face whitish, thick and distinct .... 2.
— Keels of face concolorous with frons, thin and indistinct .... 4.
2. Middle keels of face separated throughout, mouth of pygophor subtriangular, teeth of anal tube shorter than broad at base, not divergent .... *C. albomarginatus* Curtis.
— Middle keels of face convergent at or before apical margin of frons; mouth of pygophor more or less oval or pyriform; teeth of anal tube much longer than broad at base, strongly divergent .... 3.
3. Middle keels of face as distinct at base of frons as at its apex; pygophor slightly longer than wide;* teeth of anal tube swollen at base, then suddenly narrowed .... *C. williamsi* sp.nov.
— Middle keels of face evanescent at base of frons towards vertex; pygophor slightly wider than long; teeth of anal tube gradually tapering to their apices .... *C. moestus* (Boh.).

---

* *C. borealis* (J. Sahlb.) comes here. It differs from *C. williamsi* in the short narrow subparallel teeth of anal tube and slender cylindrical styles. See fig. 1*c*.

4. Pronotum, scutellum and abdomen yellow with longitudinal black stripes .... *C. nigrolineatus* Scott.
— Not so coloured .... 5.
5. Frons narrow, uniformly yellow; the mesonotum, tegmina and abdomen shining black .... *C. pteridis* Boh.
— Frons broad, marked with black at apex above clypeus .... 6.
6. Genital styles obliquely truncate at apex, each angle produced into a small tooth .... *C. affinis* Fieb.
— Genital styles acuminate at apex .... *C. bicarinatus* H.S.

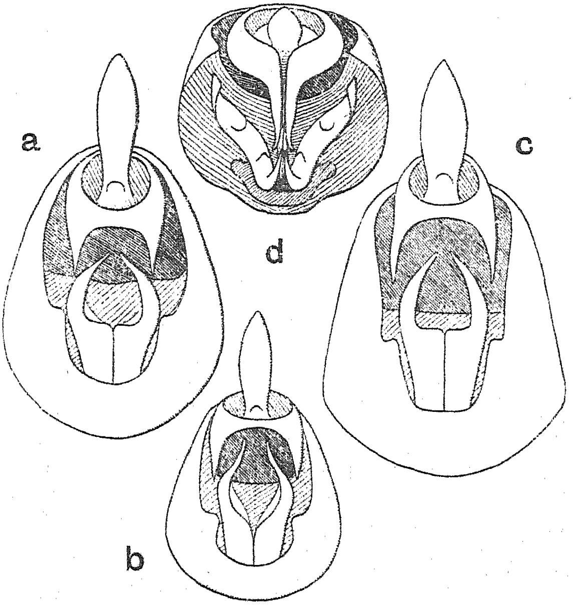


Fig. 2.—Terminal view of male genitalia of (*a*) *Stenocranus minutus* (Fabr.); (*b*) *S. fuscovittatus* (Stål.); (*c*) *S. major* (Kbm.); (*d*) *Eurysa lurida* Fieber.

Genus *Stenocranus* Fieber, 1866.

Stenocranus major (Kirschbaum), 1868 (Fig. 2c).

Stenocranus major (Kbm.), Haupt, Die Tierwelt Mitteleuropas IV, 3, Insekten 1, p. 135, 1935.

On August 29th, 1938, Messrs. B. S. Williams and P. Harwood collected at Wicken Fen, Cambridgeshire, a large species of *Stenocranus* which they noticed was quite distinct from specimens taken in the neighbouring dry 'breck' land. Specimens of each form were submitted to me by Mr. Williams, and while the breck land form turned out to be *S. fuscovittatus* Stål, the large fenland species was identified as *S. major* Kbm., which Haupt has recently resuscitated from synonymy under *S. fuscovittatus* Stål. Haupt has shown that *S. major* Kbm. is intermediate between *S. minutus* (Fabr.) and *S. fuscovittatus* Stål in the length of the head in front of the eyes. A careful study of the genitalia of all three forms shows that *S. major* (Fig. 2c) is very similar to *S. minutus* (Fig. 2a) in this structure, whereas in *S. fuscovittatus* (Fig. 2b) there are more distinct differences.

Instead, therefore, of being synonymous with *S. fuscovittatus* Stål, as regarded by Oshanin and other authors, *S. major* Kbm. is more closely allied to *S. minutus* (Fabr.), and might even be regarded as the macropterous form of *S. minutus* (Fabr.). Any one of the three characters separating it from the Fabrician species, size, shorter vertex and slight genital differences, taken alone would be insufficient grounds for regarding it as a distinct species, but all three taken together make one diffident about synonymising it under *S. minutus* Fabr.

The British species of *Stenocranus* may now be separated as follows :—

Stenocranus Fieb., 1866.

Basal joint of antennae one-third as long as second, frons with one middle keel which is entire or only forked on the forehead. Side keels of pronotum straight, reaching the hind margin. Frons more than three times as long as its width in middle.

1. Front tibia distinctly dilated towards apex .... *longipennis* (Curtis).

— Front tibia subcylindrical, scarcely wider at apex than at base .... 2.

2. Membrane between veins of tegmen finely, transversely wrinkled; in lateral view the side of head (*i.e.* between eye and marginal keel) twice as wide above eye as at its narrowest part just above ocellus. No black markings on head .... *minutus* F.

— Membrane between veins of tegmina smooth and shining, the side of head (*i.e.* between eye and marginal keel) less than twice as wide above eye as at its narrowest part just above ocellus. Two black lines down face between median and marginal keels .... 3.

3. Side of head between eye and marginal keel 1½ times as wide above eye as at its narrowest part just above ocelli; outer margins of genital styles uniformly convex (Fig. 2c) .... *major* Kbm.

— Side of head between eye and marginal keel equally wide above eye as at a point just above ocellus; outer margins of genital styles bisinuate (Fig. 2*b*) .... *fuscovittatus* Stål.

Dicranotropis Fieber, 1866.

On July 17th, 1938, Mr. P. Harwood collected at Struan, Perthshire, several specimens of a strange species of *Dicranotropis*. These I have been able to identify as *D. divergens* Kbm., a species new to Britain.

Dicranotropis divergens Kbm. (Fig. 3b and c).

Dicranotropis divergens Kirschbaum, Jahrb. Nassau. Vereins Naturk. XXI, p. 41, 1868; Haupt, Tierwelt Mitteleuropas IV, 3, Insekt. 1, Homopt., p. 139, 1935.

Brachypterous male.—Crown pale fulvous; frontal keels white, margined with black, the area between fork and between middle and lateral keels on forehead black; area between middle and lateral keels on remainder of face fulvous. Pronotum with a narrow white central stripe and with the lateral keels interiorly margined with dark brown; mesonotum with a much broader median white stripe margined with black. Tegmina pellucid greyish-white, veins and apical margin white. Legs sordid yellow with the ultimate tarsal segment black and a certain amount of infuscation of femora (especially the hind femora) and inner margins of tibiae. Abdomen entirely black with some deep fulvous markings on connexivum. Genital styles fulvous.

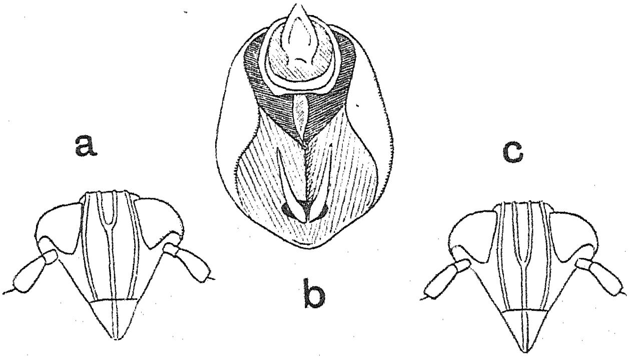


FIG. 3.—(*a*) Frontal view of head of *Dicranotropis hamata* (Boh.); (*c*) Frontal view of head of *D. divergens* Kbm.; (*b*) Terminal view of male genitalia of *D. divergens* Kbm.

Middle keel of frons forking on apical half of frons (*i.e.* half nearest clypeus), the position of fork variable but the stem always shorter than the branches (Fig. 3*c*). Tegmina extending on to base of abdomen, that is about half length of body from posterior margin of pronotum to apex of abdomen, their apices truncate not strongly rounded as in *D. hamata*. Genital segment short, higher than wide in terminal view, styles short, thin and acuminate, feebly divergent. Genitalia figured (Fig. 3*b*).

Length 2.3 mm.

Brachypterous female.—Much paler than male, the median white stripe on mesonotum much less distinct. Abdomen greyish-yellow with two rows of small black spots down middle, two rows of larger black spots down each side and the lateral margins broadly blackish. Legs uniformly sordid yellow except last tarsal segments, which are black.

Length 3 mm.

Habitat: PERTHSHIRE, Struan, 17.vii.1938 (P. Harwood).

This species is recorded from Belgium, Germany, Switzerland, Austria, Hungary and Roumania. According to Haupt it is a glacial relic found in boggy places in mountainous districts.

D. divergens Kbm. may readily be separated from the only other British species, *D. hamata* Boh. (Fig. 3A), by the fork of the median frontal keel being placed nearer the clypeus, so that the stem is shorter than the two branches (Fig. 3C), by the more truncate apical margin of tegmen, by the entirely black abdomen in the male, by the very short, non-protuberant pygophor without the deep median dorsal emargination typical of *D. hamata*.

Family EUSCELIDAE.

Genus *Psammotettix* Haupt.

Deltocephalus J. Edwards part.

Psammotettix Haupt, Zool. Jahrb. Abt. f. Syst., LVIII, p. 262, 1929.

Ribautiellus Zachvatkin, Mem. Soc. ent. ital. Genova, XII, p. 268, 1932.

In my list of corrections and additions on p. 194 I brought forward the generic name *Ribautiellus* for those species of the old genus *Deltocephalus* typified by *striatus* L. Dr. Ribaut has recently shown that this genus is synonymous with the older *Psammotettix* Haupt, type *Athysanus maritimus* Perris. The name *Psammotettix* therefore takes priority over *Ribautiellus* for this group.

In my list I also gave *Deltocephalus thenii* Edw. twice, once (572D) as a synonym of *D. confinis* Dahlb. and once (558A) under *Ribautiellus*. Number 572D should of course be deleted and the line transferred to 558A in place of the line at present under that number. No. 572C should also have appeared under *Ribautiellus*.

Psammotettix striatus (L.), Fig. 4 (5 and 6).

Messrs. Harwood and Williams collected last August a breckland (Suffolk) form of *sabulicola* which appeared strange to them. A study of the genitalia reveals the fact that this is the true *P. striatus* (L.), which is apparently closely allied to if not synonymous with *P. sabulicola*. As pointed out in my list (No. 557), Wagner regards our *P. sabulicola* Curtis as a sand-dune form of *P. striatus* L. This is the first time the typical *P. striatus* L. has been recorded from Britain. It is apparently quite rare with us.

Psammotettix nodosus (Rib.), Fig. 4 (1 and 2).

Deltocephalus striatus Edwards nec L.

Deltocephalus nodosus Ribaut, Bull. Soc. hist. nat. Toulouse, LIII, p. 17, 1925.

Psammotettix nodosus Rib., op. cit., LXXII, p. 166, 1938.

The species which we have known for so long in Britain as *Deltocephalus striatus* L. is apparently *Psammotettix nodosus* Ribaut. The name is of course new to the British list. The species closely resembles *P. confinis* (Dahlb.) (*Deltocephalus thenii* Edw.), Fig. 4 (7 and 8), in general appearance, but differs in the shape of the aedeagus. The genitalia of both species are figured for comparison. Edwards (E.M.M., 1915, p. 208) states, 'I only know *D. striatus* from coast marshes at Wells and Weybourne, Norfolk,' but *P. nodosus* Rib. is widely distributed in England, and there are specimens in the Museum from Kent, Surrey, Hertfordshire, Norfolk, Worcester, Gloucester and Cheshire.

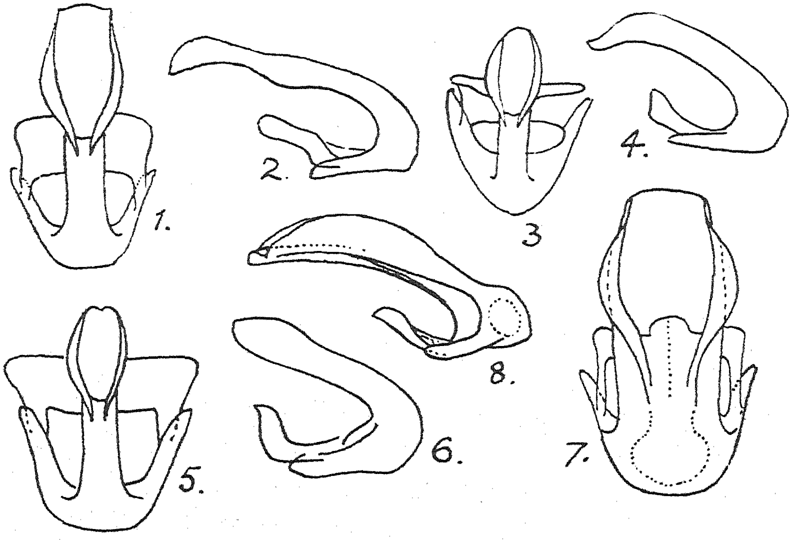


FIG. 4.—(1) *Psammotettix nodosus* (Rib.) aedeagus, morphologically anterior view; (2) same, lateral view; (3) *Psammotettix cephalotes* (H.S.) aedeagus, morphologically anterior view; (4) same, lateral view; (5) *Psammotettix striatus* (L.) aedeagus, morphologically anterior view; (6) same, lateral view; (7) *Psammotettix confinis* (Dahlb.) aedeagus, morphologically anterior view; (8) same lateral view. All figures after Ribaut.

Psammotettix cephalotes H.S., Fig. 4 (3 and 4).

Jassus cephalotes H.S., Faun. Germ., p. 125, 6, 1834.

Deltocephalus assimilis Scott (nec Fallén), E.M.M., XII, p. 243, 1876.
Deltocephalus normani Scott, E.M.M., XVIII, p. 105, 1881.
Deltocephalus citrinellus Edw., Hem. Hom. Brit. Is., p. 150, 1896.
Deltocephalus substriatus Then, Mitth. Naturw. Ver. Steierm., p. 186, 1901.

Ribaut has shown (Bull. Soc. hist. nat. Toulouse, LIII, p. 12, 1925) that this species varies from the uniformly opaque greenish-yellow form (*citrinellus* Kbm.) to forms in which the greenish tint is replaced by brownish-yellow and in which there are dark brown markings similar to those of *P. striatus*. *D. substriatus* Then may be regarded as the extreme form.

Edwards has shown (E.M.M., 1915, p. 208) that *D. substriatus* Then is synonymous with *D. normani* Scott. I have recently studied the genitalia of the type of *D. normani* Scott and find them identical with those of *P. cephalotes* H.S. *D. normani* may be regarded as a form intermediate between the typical yellow *cephalotes* and the brownish *substriatus*. This means that No. 559 in Edwards' 1908 Catalogue equals No. 556.

The British species of *Psammotettix* Haupt. are now as follows:—*P. striatus* (L.), *P. striatus* (L.) var. *sabulicola* (Curt.), *P. cephalotes* (H.S.) (=*normani* (Scott)), *P. cephalotes* (H.S.) var. *substriatus* (Then), *P. nodosus* (Rib.), *P. halophilus* (Edw.) and *P. confinis* (Dahlb.) (=*thenii* (Edw.)). No. 572c in my list should be transferred to below No. 557.

Family TYPHLOCYBIDAE.

Genus *Typhlocyba* Germ., 1833.

Anomia Edwards, E.M.M., 1928, p. 80.

Typhlocyba scalaris Ribaut.

Ribaut, Bull. Soc. hist. nat. Toulouse, LXI, p. 290, 1931.
Faune de France 31, Homopt. Auch., Typhlocybidae, 1936, p. 121.

Allied to *T. tenerrima* H.S. No black spots on the vertex or on the pronotum; the apex of the scutellum also without a black spot. Yellow pigment of the tegmina localised in the clavus and median cell, forming in consequence two yellow longitudinal bands separated by the pale cubital cell. Extremities of the cubital, median and radial cells fairly strongly infuscate; apical cells less distinctly infumate except at their base, where the infumation is as intense as on the apices of the discal cells. The brown marking of the extremities of the apical nervures and the transverse subcostal nervure distinct, but that of the internal apical nervure thinner than in *tenerrima* H.S. Metanotum and anterior half of all the abdominal tergites black. Venter pallid. Each of the spines of the superior external row of the posterior tibia arising from a dark brown spot.

Genitalia figured. Fig. 5 (1, 2 and 3).
Length 3.25 mm. to 3.65 mm.
On oak.

Occasionally specimens of *T. tenerrima* occur, on oak, which have some of the tibial spines arising from brown spots, but these may be distinguished from *T. scalaris* by the different infumation of the elytra as well as by the male genitalia.

This species was collected by Mr. H. Britten on oak at Alderley Edge, Cheshire, on August 8th, 1937. Later he took specimens on oak at Sleights, Yorkshire.

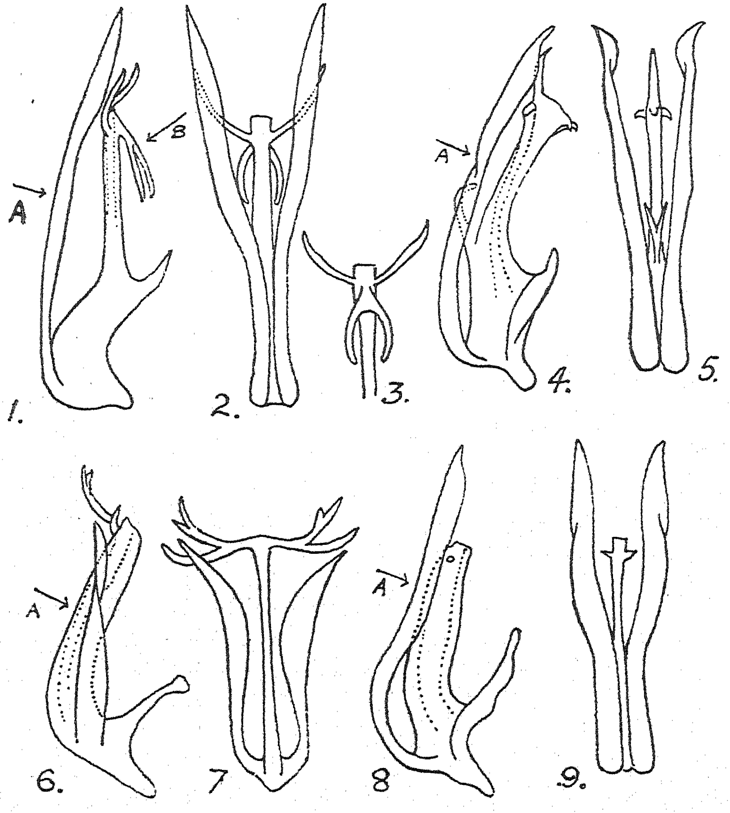


FIG. 5.—(1) *Typhlocyba scalaris* Ribaut, aedeagus from right side; (2) same, seen in direction of arrow 'A'; (3) same, seen in direction of arrow 'B'; (4) *Typhlocyba tenerrima* H.S., aedeagus from right side; (5) same, seen in direction of arrow 'A'; (6) *Typhlocyba debilis* Douglas, aedeagus from right side; (7) same, seen in direction of arrow 'A'; (8) *Typhlocyba cruciata* Ribaut, aedeagus seen from right side; (9) same, seen in direction of arrow 'A.'
All figures after Ribaut.

Typhlocyba cruciata Ribaut, Fig. 5 (8 and 9).

Ribaut, Bull. Soc. hist. nat. Toulouse, LXI, p. 284, 1931.

Faune de France 31, Homopt. Auch., Typhlocybidae, 1936, p. 116.

Allied to *ulmi* (L.), Fig. 6 (10 and 11), *debilis* Dougl., Fig. 5 (6 and 7), and *tenerrima* H.S., Fig. 5 (4 and 5). Form of head, yellow colour of tegmina and infumation of apical region of latter as in *T. ulmi* L. No black spots on vertex or on pronotum. Sometimes there is a small black spot beneath the apex of the scutellum, but it is never visible from above. Abdomen black above in the ♂, with the margins broadly testaceous. In the ♀ the dorsum is testaceous, with two narrow black transverse bands, one at the base, the other at the extremity on the penultimate tergite. Sometimes the bases of the intermediate tergites also carry a narrow black band. Posterior tibiae without brown spots at base of spines. Genitalia figured. Fig. 5 (8 and 9).

Length 3.0 mm—3.4 mm.

Lives in France on elm, alder and bramble. In England collected by Mr. H. W. Daltry on sloe (probably accidental) at Farley Downs, near Winchester, 6.x.1937, and on elm at Brent Knoll, N. Somerset.

Typhlocyba froggatti Baker, Fig. 6 (14-18).

Empoasca australis Froggatt, Agric. Gazette N.S. Wales, XXIX, p. 568, 1918.

Typhlocyba australis Myers, Proc. Linn. Soc. N.S. Wales, XLVI, Pt. 4, p. 473, 1921 (preoccupied by *australis* Walsh, 1864).

Typhlocyba froggatti Baker, Philippine Journ. Sci., XXVII, p. 537, 1925 (new name).

Typhlocyba oxyacanthae Ribaut, Bull. Soc. hist. nat. Toulouse, LXI, p. 334, 1931.

Typhlocyba australis Ribaut, Faune de France 31, Homopt. Auch. Typhlocybidae, 1936, p. 95.

This species was first recorded as British by Ribaut in the legend to Fig. 212 of his 1936 Monograph. He omitted England from the distributional data at the end of the description, so that I failed to record it as British in my list of additions.

As shown by the above references, this species has an interesting history. It was first recorded by Froggatt from Australia as damaging apple foliage. Later Myers recorded it from New Zealand, where it does considerable damage to apple trees in the orchard districts of Auckland (N. Island) and Nelson (S. Island). It was not recorded from Europe until 1931, when it was redescribed by Ribaut under the name *T. oxyacanthae*. Baker's new name *T. froggatti* for the preoccupied *T. australis* seems to have been overlooked until now.

Closely allied to *T. crataegi* Douglas. Moderately deep yellow with the apical cells and extremities of cubital, median and radial cells usually strongly infumate. Sometimes the smoky tint of the apical region is slight. A smoky stripe with its external border blurred lies along the claval commissure; although often reduced to a fine piping, sometimes, but rarely, it extends over the whole width of the clavus, while the infuscation of the discal cells is equally extended. Usually the posterior tibiae bear brown spots at the base of the spines of the superior-external row.

Genitalia figured. Fig. 6 (14—18).

Length 3.1 mm.—3.65 mm.

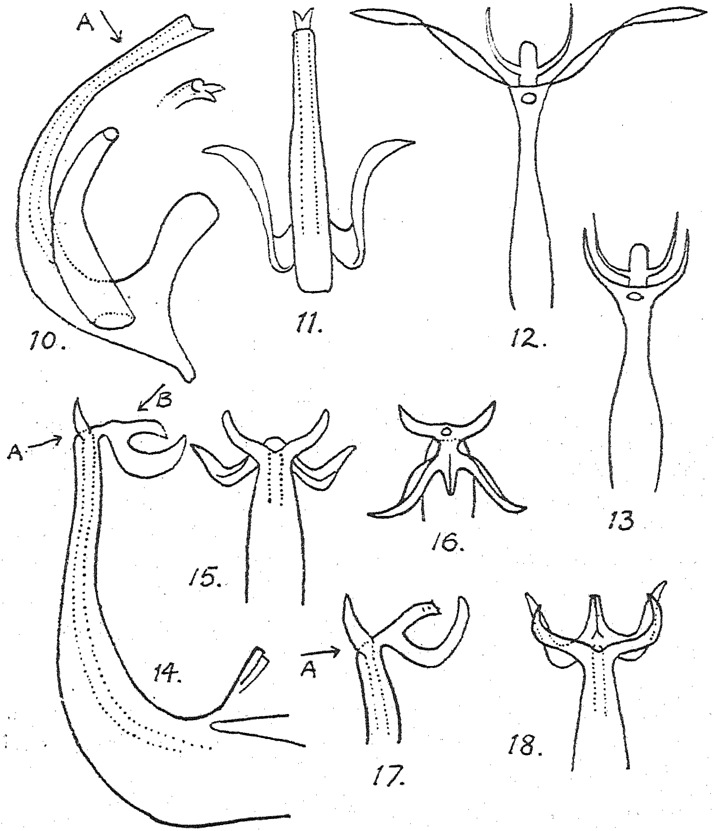


FIG. 6.—(10) *Typhlocyba ulmi* (L.), aedeagus from right side; (11) same, seen in direction of arrow 'A'; (12) *Typhlocyba crataegi* Douglas, aedeagus, normal form, dorso-cephalad aspect; (13) same of an aberrant form; (14) *Typhlocyba froggatti* Baker (=*australis* Froggatt=*oxyacanthae* Rib.), aedeagus from right side (French specimen); (15) same, seen in direction of arrow 'A'; (16) same, seen in direction of arrow 'B'; (17) *T. froggatti* Baker (English specimen), aedeagus seen from right side; (18) same, seen in direction of arrow 'A.' All figures after Ribaut.

Occurs in France on hawthorn and plum.

This species is probably widely distributed in Britain. Specimens from Slough, Buckinghamshire, tentatively identified as *T. australis* by Dr. O. W. Richards turned out to be *T. crataegi* Douglas.

British Museum (Natural History),
Cromwell Road, London, S.W.7.
December 31st, 1938.

NOTES ON BRITISH COLLEMBOLA.

BY RICHARD S. BAGNALL, D.SC.

(*Concluded from p.* 28.)

Folsomia litsteri sp.n.

Length 0.6—0.8. White. Body clothing of moderately short fine setae and without prominent outstanding bristles. PAO simple, double-rimmed and about 2.8—3.0 times as long as broad near middle and 0.6—0.7 as long as width of basal antennal joint. Foot longer than the axis of PAO, 1.6 times as long as the mucro; outer margin of claw very slightly curved, inner margin simple. Manubrium furnished with three pairs of ventral bristles, one above the other, in the distal half or thereabouts, the middle pair more widely separated than the basal. The dentes are 1.2 to 1.33 times the length of the manubrium; the relative lengths of the manubrium, dentes and mucro of the type specimen being c.31 : 40 : 6.5. The longest bristles of the last abdominal segment are very fine and twice as long as the mucro (13 : 6.5) as compared with about four times the length (39 : 10) in a smallish example of *fimetaria* picked at random.

DURHAM, Gibside woods, several examples, xii.34 (type and paratypes). E. YORKS, Boynton Woods, several from under bark of elm, 20.v.34. LONDON district, Dulwich Wood Park Gardens, S.E., 19.viii.34. SCOTLAND, Dalmeny Woods, tidal flat, iv.37. IRELAND, Belfast (*J. Litster*).

II. *quadrioculata* Group. Species with greater or less pigmentation, rarely white and with one or two ommatidia, heavily pigmented, on each side of the head.

SECTION A. One ommatidium on each side of the head situated close to the PAO. This section contains two British species which can be readily separated by means of the following key :—

(*a*) Manubrium and dentes subequal. Manubrium with a single strong ventral bristle on each side and dentes with 6—7 ventral setae; dentes approximately 3.0 times as long as the mucro .... *F. diplophthalma* Axels.

(*b*) Manubrium with three or four ventral bristles on each side, dentes at least 1.2 times as long as the manubrium, with 15 ventral setae and approximately 6.0 times as long as the mucro .... *F. similis* sp.n.

Folsomia diplophthalma Axels.

This would appear to be a rare species with us, and although it has been referred to as a variety of *quadrioculata,* the short, closely set fine setae of the body (the longer apical bristles of which are substantially shorter than the dentes) make it impossible to confuse it with pale varieties of *F. quadrioculata.*

E. YORKS, Boynton Woods, two examples under bark of elm, 21.v.34. Also a single example from Ireland (*J. Litster*).

Folsomia similis sp.n.

Of the same size and general form as *diplophthalma* and having the same short clothing of setae. The longer fine bristles at and towards the end of the body are only 0.4—0.5 the length of the dentes and 2.5—3.0 times as long as the mucro.

PAO long, constricted medianly and narrowed at each end. Foot with empodial appendage comparatively larger than in *diplophthalma* and widely separated from claw. Relative lengths of manubrium, dentes and mucro, 10 : 12 (12.5) : 2, the dentes furnished with 15 ventral setae; manubrium furnished with one long and strong distal bristle supported by two smaller subdistal bristles on each side, and in the type example there is a still weaker seta situated on a higher plane but on one side only.

E. YORKS, Bridlington, 2 examples from under a stone, vi.34.

SECTION B. Two ommatidia on each side of head, the upper situated close to PAO and the other some distance from and in a direct line behind it.

Subsection I. Colour pale; end of abdomen furnished with numerous long bristles forming a brush-like mass; *claws with a pair of strong lateral teeth; manubrium furnished with four* (3 + 1) *ventral bristles* situated distally on each side as in *fimetaria* s.str., *but with a basal median series of fine setae in addition* .... = *penicula* group.

Folsomia penicula sp.n.

Length 1.0 to 1.3 mm. White, lightly blotched with grey to blackish-grey, more particularly on the head; ommatidia heavily pigmented. Body somewhat coarsely furnished with setae of varying lengths; the long bristles towards the end of the body increase considerably in number and are very profuse at the apex, where they form a brush-like mass from which the species gets its name. The PAO is very elongated, some 6.0 times as long as broad, and irregular in form, but generally narrowed and somewhat pointed at each end and constricted at middle. The claws are furnished with a strong lateral tooth on each side.

The stout distal bristles of the ventral surface of the manubrium number 4 (3 + 1) on each side situated much as in *fimetaria,* but in addition there is a median series of four or five smaller and finer setae situated towards the base. The dentes are approximately 1.25 times as long as the manubrium, the relative length of the manubrium dentes and mucro of a typical Irish example being 36 : 44 : 8.

This species is found under bark, under logs and stones, in moss and leaf-mould, etc., and is evidently widely distributed. I have numerous records from Scotland, the North of England, London district, whilst Litster has sent it to me from S. Devon and various parts of N. Ireland, where it appears to be particularly plentiful.

Subsection II. Colour pallid to lighter or darker grey; body clothing varying in species; claws *without* lateral teeth; ventral surface of manubrium furnished with no or one distal bristle on each side .... =*quadrioculata* group.

This section contains three species as diagnosed in the following key :—

1. Manubrium with a single ventral bristle situated distally on each side .... 2.

Manubrium *without* ventral bristles. (Species small, colour pale, body vestiture short except for a few long bristles at extreme apex of abdomen which are c.3.0 times the length of the mucro) ...... *F. achaeta* sp.n.

2. Size larger, 1.0—1.4 mm., stouter, bristles of varying sizes, the outstanding ones—the longest bristles at end of abdomen—prominent, c.3.5—4.0 times as long as the mucro. Manubrial bristles stouter—as long as mucro. Dentes shorter than manubrium, c.3.5 times as long as mucro (28 : 8) .... *F. quadrioculata* (Tullb.).

Size smaller, 0.6—0.8 mm., bristles shorter, finer and much less variable, the longest outstanding bristles c.2.0 times as long as the mucro, only slightly longer than the others and not prominent. Manubrial bristles shorter; dentes shorter than manubrium and c.3.5 times as long as mucro (14 : 4) .... *F. manobechei* sp.n.

Folsomia manobechei sp.n.

A smaller and generally darker form than *F. quadrioculata* and more local in its distribution. The chief difference lies in its shorter and finer body vestiture, the longer bristles towards the end of the abdomen being only slightly longer than the others and only twice as long as the mucro, as compared with 3.5—4.0 times the length in *quadrioculata*. In *quadrioculata* the ventral setae of the dentes are usually arranged as follows: 1+1+1+2+3, whereas in *manobechei* they number 1+1+2+3.

SCOTLAND, South Queensferry, xii.34; Boghall (Pentlands), 1928-30, common (*Kendall*). DURHAM, Ryhope Dene, vi.34. YORKS, Danes Dyke, vii.34. Also from S. Devon and Ireland (*J. Litster*) and Roumania (*Manobeche*).

Folsomia achaeta sp.n.

Length c.0.8 mm. Form as in *manobechei*; colour pallid, eyespots prominent. The species differs from both *quadrioculata* and *manobechei* in the *absence* of the distal ventral setae of the manubrium and in the nature of its body vestiture. The tergites are clothed regularly with moderately short setae, and are without longer outstanding ones, except for a few at the tip of the abdomen, which are substantially longer than the others, and not quite 3.0 times the length of the mucro. The furca is typical of allied species, and also, as in the other species, the dentes are approximately 3.5 times the length of the mucro. The arrangement of the ventral setae of the dentes are 1+1+2+2+1.

DURHAM, Low Fell, under stones with *F. penicula m.* and *Isotoma minor*; two examples (excluding a very minute young one) only, 11.vii.38.

ADDENDUM.

Folsomia monophthalma sp.n.

Length 1.0 mm. Belonging to the *diplophthalma* group. PAO as in *similis*. Body bristles long, strong and sparse, the backwardly directed, of three different lengths, the outstanding ones towards end of body 1.3 times the length of dentes; a dorsal brush of long bristles at end of abdomen. Manubrium short and stout, dentes apparently more slender than in *diplophthalma*, equal in length to the manubrium—the ventral setae (of dentes) minute, numbering 11—12; relative lengths of dentes and mucro 13 : 3. Manubrial ventral setae 3 on each side, one above the other.

ROUMANIA, Johani district, Buzan, 1931 (*Manobeche*).

CORRIGENDA.

I regret that, through non-receipt of the proofs of this paper, I was unable to make a correction regarding the identity of *Polycanthella thalassophila* described herein. Upon consulting the original description of *P.* (*Conotelsa*) *acuminata* Denis, it became evident that my species was identical, and that his reference to the furca (in a key to the known species of *Friesia* (*Polycanthella*) as 'well-developed' should be read strictly in relation to other species of the genus (*s.l.*). *P. thalassophila* Bagnall (1939, Ent. Mon. Mag., LXXV, p. 22, figs. 1—6) therefore falls as a synonym of *P.* (*Conotelsa*) *acuminata* Denis. '*P. thalassophila* sp.n. (Figs. 1—3 and 6—8)' on page 22 should read '(Figs. 1—6),' '*T. kendalli* sp.n. (Figs. 4 and 5)' on page 24 should read '(Figs. 7—8).'

3 St. Helen's Terrace,
Low Fell, Gateshead-on-Tyne.

Gymnetron collinum Gyll. (*Col.*, *Curculionidae*) *in East Kent.*—In the course of a paper on this species and *G. linariae* Panz. some little time ago (1937, Ent. Mon. Mag., **73**: 258), Mr. H. Donisthorpe gives the known distribution of the former rare species. When working moss on the downs between Kingsdown and St. Margaret's-at-Cliff on May 7th, 1934, I took a single example of this species. When in London recently I showed it to Dr. K. G. Blair, who kindly confirmed my determination. I subsequently mentioned the matter to Mr. P. Harwood, and he told me he had also taken the species in this neighbourhood.—H. W. DALTRY, F.R.E.S., Bar Hill, Madeley, Crewe: *February 7th*, 1939.

THE GALL-MAKING HYMENOPTERA OF SOME OF THE WESTERN ISLANDS OF SCOTLAND.

BY J. W. HESLOP HARRISON, D.SC., F.R.S.

As is well known, in 1934 the Department of Botany, King's College, University of Durham, planned a survey of the Inner and Outer Hebrides with a view to producing a comprehensive flora of the Watsonian vice-counties 103, 104 and 110. This, of course, necessitated the organisation and dispatch of a series of expeditions for that and other purposes, and for five successive years two or more parties have stayed on selected islands for fairly long periods. As a result, no fewer than thirty islands have been examined.

Although the flora has formed the main object of our work, the entomology of the islands has not been neglected, and a number of papers dealing with diverse aspects of their insect fauna has already appeared in various publications, including the Entomologist's Monthly Magazine. In the present article, it is proposed to add to them by giving an account of the gall-making Hymenoptera collected on various islands.

CYNIPIDAE.

Rhodites rosae L.—This usually very common species is far from being well distributed in the Hebrides, for up to the present it has been discovered only in the Isle of South Rona, where it is not uncommon. There wild roses occur freely, and the insect is attached to various roses of the *Sherardi* group, more especially to the endemic *Rosa glabrata*.

R. eglanteriae Htg.—Quite rare on *Rosa Sherardi* and *R. glaucophylla* forms in Raasay, Scalpay, Soay and Eriskay. It is remarkable that this is the only rose Cynipid recognised in the Outer Hebrides. It seems necessary to point out that the Scalpay and Soay just named are those lying off Skye.

R. rosarum Gir.—This species occurred on *Rosa glaucophylla* on the slopes of Scalpay looking towards Skye.

R. spinosissimae Gir.—Only found on a cliff ledge near Port Mor, Isle of Muck, on a grassy slope leading to Harris, Isle of Rhum, and on ledges on Canna and Coll. In every instance various forms of the *Rosa spinosissima* and *R. pimpinellifolia* played the part of host-plant. These plants occurred much more commonly on Eigg, Soay and Scalpay than on the islands just named; nevertheless, careful searches failed to reveal the presence of the insect on any of them. It should, however, be noted that, even in the favoured islands, only on Canna could *Rhodites spinosissimae* be described as other than very rare.

Xestophanes brevitarsis Thoms.—On *Potentilla erecta* growing on lower moorlands in the Inverarish and Osgaig areas of Raasay, and along the Kinloch valley in Rhum.

Isocolus jaceae Schenck.—Not plentiful on Black Knapweed on Raasay and Eigg.

Aulacidea hieracii Bouché.—In spite of the fact that hawkweeds are well distributed in the Scottish islands, this species was only observed on Handa Island lying off the west coast of Sunderland, near Scourie, and therefore in vice-county 108.

Cynips kollari Htg.—Although it is a prevalent opinion that the Hebrides are windswept treeless islands, our examination of the distribution of oak pollen in various post-glacial peats, as well as the discovery of huge oak stumps, has amply demonstrated that this tree was once plentiful and widespread both in the Inner and Outer Islands. Nor is it correct to assume that it is absent now, for well-grown oakwoods still exist on Raasay. Moreover, on Rhum, in sheltered gorges, shapely trees may yet be encountered, whilst on the sea cliffs, especially in the north, oak scrub composed of *Quercus sessiliflora* is not rare; even on the landward cliffs of Mullach Mor it may be found. Soay, too, produces a few healthy trees; on the other hand, oak scrub abounds on Eigg both on the Scurr, near Poll nam Partan and elsewhere. On the last-named island *Cynips kollari* is quite common, and its occurrence there raises questions as to its origin. Is it to be regarded as an introduction, or is it to be deemed a genuine native? For several reasons, to be developed in later papers, I lean to the latter view.

Biorrhiza pallida Bosc. (sexual generation), *B. aptera* Oliv. (agamous generation).—Only the sexual generation was observed in this species, and that on Raasay by Dr. G. Heslop Harrison.

Trigonaspis megaptera Pz. (sex. g.), *T. renum* Gir. (ag. g.).—Curiously enough, here the agamous generation was taken, but only on well-grown trees south of Soay Harbour, Soay, in a gorge leading from Shamh nam Insir, Rhum, and on Raasay.

Diplolepis similis Adl. (sex. g.), *D. longiventris* Htg. (ag. g.).—The latter generation was observed to be fairly abundant on Raasay in 1934.

Andricus pilosus Adl. (sex. g.), *A. fecundatrix* Htg. (ag. g.).—Once again only the agamous generation turned up, in this case on the oak scrub above Poll nam Partan, Eigg, and in Raasay House Woods, Raasay.

Andricus furunculus Bey. (sex. g.), *A. ostreus* Gir. (ag. g.).—The form *A. ostreus* was found somewhat plentifully on both *Quercus Robur* and *Q. sessiliflora* along the Arish Burn, Raasay, during the years 1934-37.

Andricus curvator Htg. (sex. g.), *A. collaris* Htg. (ag. g.).—This species was collected in June, 1938, in its latter guise on Eigg and on Raasay in 1936.

Neuroterus albipes Sch. (sex. g.), *N. laeviuscula* Sch. (ag. g.).—Again only one generation (the agamous) came under our notice, and it was restricted to weatherbeaten specimens of *Quercus sessiliflora* growing on rocks on the Mulloch Mor slopes facing the Kinloch Burn, Isle of Rhum.

Neuroterus quercus-baccarum L. (sex. g.), *N. lenticularis* Oliv. (ag. g.).—Very common at all suitable points on Rhum, Eigg, Soay and Raasay; in the case of Eigg both generations were observed.

Neuroterus vesicatrix Schl. (sex. g.), *N. numismatis* Oliv. (ag. g.).—Not rare on Eigg, the northern portions of Rhum on the Torridonian Sandstones and in South Central Raasay; once again, owing to our visit to Eigg in the spring of 1938, that island provided both generations.

CHALCIDIDAE.

Isosoma depressum Walker.—Quite rare on *Festuca ovina* and allied forms along the valleys of the Kilmory and Kinloch Burns, and on *Festuca prolifera*, an American grass recently discovered in the Hebrides, on Barkeval, Rhum; also on the moorlands lying westward of, and beneath, Dun Caan, Raasay.

I. graminicola Gir. — Sparingly and unevenly distributed on *Agropyron junceum* on Eigg, Rhum, Sanday and the west coast of South Uist.

TENTHREDINIDAE.

Pontania pedunculi Htg.—Very common on *Salix aurita*, and much more rarely on *S. cinerea* on Raasay, South Rona, Scalpay, Rhum, Eigg, Muck, Canna, Sanday, Soay, South Uist, Eriskay, etc. The specimens listed by Greenshields (October, 1937, *Scot. Nat.*, **1937**: 141) as 'first county records' (*i.e.* for vice-county 104) are not correctly described as such. Those recorded by me (May, 1937, *Proc. Univ. Durham Phil. Soc.*, **9**: 340) were the first noted for that area.

P. viminalis L. (=*P. salicis* Chr.). — Extremely rare, and on South Uist only, where a single bush of *Salix Andersoniana*, growing on the margin of a stream issuing from Beinn Mhor, supported it.

P. collactanea Forst.—The doubts I expressed about specific identity of the *Pontania* attached to *Salix repens* (1937, *Entomologist,* **70**: 73) have been fully justified. From material supplied by me, Benson has bred the present species, which is to be recorded in greater or less abundance from every island explored. By some extraordinary misapprehension, the natives of some of the islands regard the galls as cranberries and the Creeping Willow as the cranberry!

P. proxima Lep.—On Raasay, Scalpay, Rhum, Eigg and S. Uist on *Salix aurita, S. cinerea, S. triandra,* etc. I feel certain that the insects found on *S. aurita* and *S. cinerea* will prove distinct from the others. In that case only Eigg and S. Uist will provide genuine *P. proxima*. Again Greenshields' 'first county record' claim for vice-county 104 cannot be justified.

P. herbaceae Cam.—Although the food-plant of this species, *Salix herbacea,* is well distributed in the mountains of both the Inner and Outer Islands, this insect has only been discovered in the Isle of Rhum. There it abounds on Sron an t-Saighdeir and Orval up to a height of 1,820 ft. On the side of the same ridge facing Fionchra, it descends to about 750 ft. Toward the east of the island, it is much less common at various points on the Barkeval-Hallival-Askival massif, where it reaches the 2,500 ft. contour.

Pontania sp.—In a sheltered hollow on the south side of Loch Scresort, Rhum, and on the moorland two miles west of Stoneybridge, S. Uist, I found a gall in some abundance on *Salix aurita* which was very different indeed from the usual *P. pedunculi* from that plant; it much more nearly approached that of *Pontania phylicifoliae,* as described in my recent paper (*loc. cit.*), from *Salix phylicifolia* and will, I anticipate, turn out to be a further species new to science and the British Isles.

Department of Botany,
King's College, University of Durham,
Newcastle-upon-Tyne, 2.
January 31st, 1939.

Argyroploce leucotreta Meyr. (Lep., Eucosmidae) bred in Britain.—A specimen of this moth was bred during November, 1938, from a larva found in an orange purchased at a local shop in August and stated to be probably of South African origin.—J. Hignett, 8 Oak Street, Oswestry: *February 18th,* 1939.

In Memoriam.

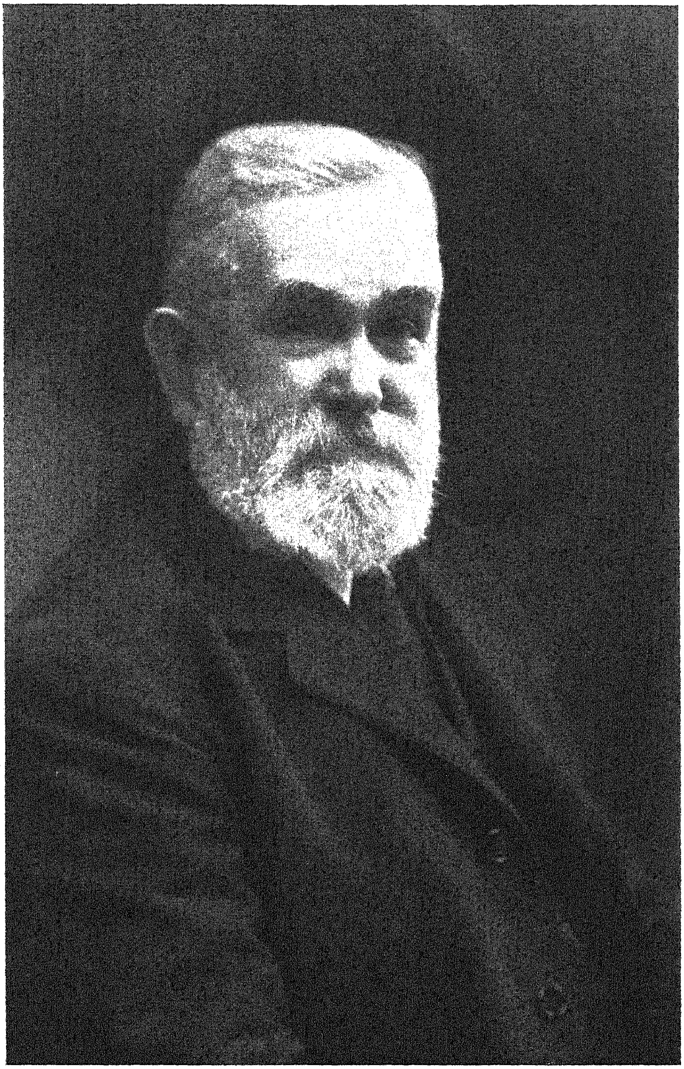
JAMES JOHN WALKER,

M.A., R.N., F.L.S., F.R.E.S.

The death of Commander J. J. Walker on January 12th, 1939, will be deeply felt by very many British naturalists, not only by entomologists, but by all who remember his genial companionship in the field and the museum — especially by readers of this journal and his colleagues on the editorial staff. The *Entomologist's Monthly Magazine* of July, 1904, records in a note on p. 148, following the obituary notice of his predecessor, R. McLachlan, F.R.S., that Commander Walker had been 'selected some months ago by our late lamented Editor-in-Chief as a fit person to fill his place and to conduct the affairs of the Magazine.' The note then states that, at the Commander's wish, the appointment was postponed 'until he had been placed on the Retired List of the Navy: he is now able to join us, and we shall look forward to him in future as our Acting Editor.' Although no other names are mentioned in this note, I have been assured by friends intimately connected with the editorship of the *Entomologist's Monthly Magazine* in 1904 that its management, on the death of Robert McLachlan, was placed in the hands of G. C. Champion, R. W. Lloyd and J. J. Walker, and that, during his lifetime, Champion was chief literary editor and, after his death in August, 1927, Commander Walker.

The acceptance of this position on the Editorial Staff nearly coincides with his move to Oxford in May, 1904, when he chose Summertown for his permanent residence, giving to his house 'the name "Aorangi," called, as my friend Dr. Hugh Scott reminds me, after the highest peak, 12,349 feet, of the Southern Alps in the South Island of New Zealand, to him the dearest of all the lands visited on his cruises' (*Oxford Magazine*, Feb. 16, 1939, p. 399). From the very first he was a constant visitor to the Hope Department of Entomology and gave the most valuable help in arranging, naming and recording the insects in its historic collections. The titles of many papers in which this work is described will appear on later pages. He was also a very generous benefactor, presenting an immense number of specimens collected on his voyages and in Britain.

The degree of M.A., *honoris causa*, was conferred on him by the University of Oxford on August 10th, 1905.



Gillman, Oxford, *photo*.

To face page 64.

Yours very truly
James J. Walker
29th December 1930

The following record of the Commander's family history has been kindly provided by his sister, Mrs. G. C. Champion :—

'James John Walker was the son of James Samuel Walker of the Royal Naval Dockyard, Sheerness, Sheppey. He was born at Sheerness, May 16th, 1851. His father died in 1863 and James entered the R.N. Dockyard at the age of fourteen as an engineer apprentice and student. Here he had a very successful career and received his first commission. He married in July, 1885, Miss Angelina Kerry, the daughter of Mr. and Mrs. Kerry, of North Repps, Norfolk. His wife died in 1887, leaving him with one daughter, who survives him, as do two of his sisters, Mrs. G. C. Champion and Mrs. H. G. White, both of advanced age. His brother, H. W. Walker, was a Naval Engineer but was lent by the Government to the Chinese as Professor of Marine Engineering at the Tientsin Naval College, 1884. He was markedly successful here, but the College was destroyed by the "Boxers" in 1901. He remained as Consultant Engineer in Tientsin until his death in 1905.'

Fleet-Paymaster T. Bainbrigge Fletcher has kindly consulted some old Navy lists which show that Walker became Chief Engineer on 2.iv.1888, Staff Engineer on 2.iv.1892, and Fleet Engineer on 2.iv.1896.

Walker's first meeting with G. C. Champion, his future brother-in-law, is described in the pages 'In Memoriam' written by him for this journal (Sept., 1927, Vol. LXIII, pp. 197-202). We are here told the delightful story of the discovery of a new British beetle on a day which was to mean so much to two young Coleopterists of nearly the same age—a little over nineteen.

It was during this early period of Champion's work as an entomologist that 'a chance meeting on the sea-wall near Sheerness, one sunny June morning in 1870—a day marked by the addition of *Baris scolopacea* to the British beetle-fauna—initiated a friendship which was cemented fifteen years later by a happy marriage into the writer's family, and has endured unbroken and unclouded for upwards of fifty-seven years' (p. 197).

For twenty-three of these years they worked together on the editorial staff, and when the end came, the survivor testified that Champion's 'services in maintaining the high standard and character of our magazine, which from the first has been the principal object of the Editors, can only be spoken of as inestimable, and the loss to our little company by his death is indeed a grievous one' (p. 200).

The presence of Champion's three sons — the nephews of whom their mother writes that the Commander 'was so fond and proud and who looked upon him as almost a second father' — brought much pleasure into his life at Oxford, and the periods of their residence — two of them at New College and the youngest, who gave his life for his country in the Great War, at Jesus College — were so spaced that the happiness was prolonged for many years. And then later, in 1932, the eldest served under him on the Editorial Staff of this journal.

Commander Walker was an enthusiastic naturalist, directing his attention chiefly to Coleoptera and Lepidoptera, but keenly interested in all insects and indeed in animal and plant life generally, and until later years, when walking became difficult, his energy and tirelessness on naturalists' expeditions were remarkable. His sister, Mrs. Champion, writes of his 'intense liking for the domestic cat. Indeed, his fondness for the ships' cats during his voyages earned for him the persistent nickname of "Puss-olater";' also of his 'wonderful knowledge of wild plants. He was our referee for all doubtful specimens collected by a family of ardent botanists.'

Dr. Hugh Scott — to whom we owe the photograph reproduced in our plate — first corresponded with him in 1907 and first met him in the Hope Department of Entomology in 1911, and has kindly contributed the following extremely interesting memories:—

'My most striking experience was in June, 1920, when he, Miss Walker and I were staying at Dr. David Sharp's house at Brockenhurst. I then joined the Commander and his daughter in several fairly long all-day rambles of eight miles or more, with much hard collecting, in the New Forest and along the coast. Some of these days were very hot, but he did quite as much as *I* wanted to do, though I was then scarcely thirty-five and he was sixty-nine! The way he went over rough ground, the pace he kept up and the terrific energy with which he tore at rotten wood, dead bark, etc.! Then, if we had been some minutes at a dead tree, and there seemed to be no more beetles, and the midges were annoying, he would exclaim, "Come along, I'm all midged up," and rush off to the next point on the day's programme. They were very happy days for me.'

Dr. Hugh Scott was also struck by his great knowledge of British wild plants and by his remark at the sight of a blue flax on the embankment that it was always a good thing to take the opportunity of botanising from a train. Then in later years he remembered the Commander on a walk in Wychwood Forest tasting the fruit of the snowberry and saying that he thought he had tried almost every English wild berry, poisonous or otherwise. His sister, Mrs. Champion, also remembers this, with the cautious trial of the poisonous berries. 'He was fond of telling how he began to copy a branch of mountain ash (in fruit), but when half finished, he found he had eaten nearly all the berries, one by one.'

Dr. Hugh Scott recalls memories of Walker on H.M.S. 'Kingfisher,' 1880—1884, told him by an old naval signalman, W. J. Bennell, who spoke of his devotion to natural history, with a story of his bringing some fearsome spider, reputed to be very deadly, on board and of how its escape sent various members of the crew flying up the rigging! The officer in command at the moment apparently used some forcible language.

'The Commander himself talked more to me about the subsequent cruise in H.M.S. "Penguin" (1890-93), commanded by an officer known as "Jerkins," who seems to have been a bit of a martinet. Walker said once of him: "I had many a row with Jerkins, but he never bore malice afterwards." The references to this officer were so frequent that at last Walker said to me at some entomological gathering: "You know that his name wasn't really 'Jerkins'?" The Commander used to hum over bits of a rhyming account of the voyage, beginning with the lines:—

"When the jolly old 'Penguin' surveyed the deep,
'Jerkins' had charge of that vast command;
There are tales that would make a policeman weep,
Of what we poor devils had then to stand."

'I was also much amused by the parody of a sentimental song well known in those days, "Just a song at twilight, when the lights are low"; it ran:—

"Just a song from 'Jerkins,'
When the breeze is low,
And the poor old engines,
Can't be made to go."

'The parody alludes, I imagine, to the sails and auxiliary steam of the old survey ship. All these memories bring back to me, and I hope to others, some of the happy, humorous side of the Commander.'

Two examples of the Commander's ready wit I owe to my friend Dr. H. Eltringham. The first, also recorded in the *Oxford Magazine*, p. 399, was at a time when they were looking over the

English names of moths in the Hope Department and came upon the 'Setaceous Hebrew Character' (*Noctua c-nigrum*), doubtless so-called from the fancied resemblance of a mark on the fore-wing to a Hebrew letter adorned with bristles or spines. Walker, asked by his friend what such a character could be, instantly replied that the only 'Cetaceous Hebrew Character' known to him was Jonah! The other typical jest was heard at a meeting of the Entomological Society of London when a Fellow, Mr. L. W. Newman, exhibited specimens of a moth which had become so rare that he could only capture a few, and also some of the larvae—all parasitised. Walker, who was in the Chair, remarked that 'What with the Newmans and the Ichneumons the insect seemed to be having a bad time of it!' Mr. Newman has kindly told me that he remembers the incident and thinks that the moth was a 'Clear-wing,' *Sesia andreniformis*.

The Commander's humour was also evoked by unpleasant experience or by the thought of it. Dr. Hobby tells me of a little couplet which he was fond of repeating, reminiscent of painful attacks in the New Forest with its vicious biting, or rather piercing, flies:—

'Oh! *Chrysops caecutiens,*
That's where our duty ends,'

at the same time firmly slapping the back of his hand as if in warning to the enemy to keep away from a favourite landing-place. He also remembers the Commander in his later years entering the Department on a cold winter morning with snow on the ground through which he had trudged from St. Giles' Church where the bus halted, and how he would smack his leg above the part which gave him so much trouble and say, 'I'm all right as far down as this,' and then add cheerfully, 'This is the sort of weather to make the undertakers chuckle!'

It is delightful to contemplate a life like the Commander's, full of interest and energy with the desire and power to help others in the studies and observations he loved so dearly and to know that all this and his wonderful memory endured to the very end.

He wrote to Dr. Hugh Scott on the day following May 16th, 1937, when he became eighty-six: 'Although there are times when I begin to feel my age somewhat, I am most thankful that, all things considered, I am so fit and well, and still able to tackle "a job of work."'

The following account of my last meeting with the Commander is quoted from the *Oxford Magazine* (p. 399). We were alone 'in the Hope Department, not then officially open, on December 27th last, rather over a fortnight before he died. The chief subject of which he spoke was the "Ent. Mo. Mag.," and his anxiety as Editor. He then told me of his last paper,* dated December 20th, 1938, and published in January [1939], just before his death (Vol. LXXV, pp. 9-11). Under the title "Coleoptera in a Limited Area at Oxford," it records the more interesting of fully three hundred species of beetles which he had collected in "about thirty acres of meadow and cultivated land" between his house and the River Cherwell.' It is of pathetic interest to know that his thoughts then dwelt upon this journal and his responsibility for its success, for I remember also his words about the difficulty in maintaining a steady stream of contributors. He spoke, too, about the friend who has now succeeded him — words which proved that he would have warmly supported the decision of the Editorial Committee.

A letter from his friend, the Rev. E. G. Burrough, also printed in the *Oxford Magazine* (p. 400), clearly shews that memory and intellectual vigour lived on to the very end: 'The night before he died I went to visit him, expecting him to be unable to speak, but, to my great surprise, I found him in the best of spirits and most cheerful — and he began quoting some verses to me, shewing that his intellect was as keen as ever.'

'Commander Walker has left to the Hope Department all his collections and any books and printed papers that may be selected from his library; to the Royal Entomological Society of London his manuscript diaries and £100. From *The Entomologist* (Feb., 1939, Vol. lxxii, No. 909, p. 48) we learn that his collections made on cruises in the Pacific were presented by the Lords of the Admiralty to the Natural History Museum, while most of his Australian, New Zealand and Mediterranean specimens, given to his brother-in-law, the late G. C. Champion, were bequeathed by him to the same institution.'

The above paragraph is quoted from the *Oxford Magazine* (p. 400), but special reference must be made to the collection of British beetles with the accompanying Catalogue by Hudson Beare and Donisthorpe (1904), to which four different marks have been added, indicating whether the series of each species is complete, incomplete, represented by two specimens or by one, absentees being left blank. A glance at these pages at once shews the wonderful results attained by the Commander's power as a collector, while the insects supply the most convincing proof of his skill and patience.

---

* His interesting note on a diminutive example of *Pissodes notatus*, printed on later pages (18-19) of the same number is shown by the date, December 12th, to have been written before the paper here quoted.

Commander Walker was a member of the following Scientific Societies :—

Entomological Society of London (1878; Pres., 1919-20; V.-Pres., 1916, 1921 ; Sec., 1899, 1905-18; Council, 1894, 1921 ; Special Life Fellow, 1933). South London Natural History Society (1880). Linnean Society of London (1889; Council, 1913-17). Linnean Society of New South Wales (1900). Ashmolean Natural History Society of Oxfordshire (1904; Editor, 1911 onwards; Pres., 1913-14). Society for British Entomology (1933; V.-Pres., 1937).

EDWARD B. POULTON.

I took over the Editorial management and ownership of the *Entomologist's Monthly Magazine* after the death of Robert McLachlan in association first with the late G. C. Champion as chief literary editor until his death, and then for the last ten years with Commander J. J. Walker, who had always been in touch with his brother-in-law, G. C. Champion — two of my oldest friends.

During all these years we worked together in the greatest harmony with a single eye to the prestige and success of the magazine.

Walker's death leaves me the survivor of a triple friendship which extended over more than fifty years. It would be difficult to find two men of such remarkable ability and lovable character.

Walker was one of those rare people of whom it can truthfully be said that he never had a hard word to say of anybody but always tried to find something in favour of the criticised. He will be deeply regretted and missed by myself and all his other colleagues.

R. W. LLOYD.

Lucanus cervus L. and Clytus arietis L. (Col.) in February.—On February 3rd, when digging in the garden here, my wife turned out a living female Stag Beetle. It was in the earth a little distance away from an old holly stump, in which were a number of fully grown larvae of the same species, but she noticed no particular cell from which it had come. The specimen was fully mature and in fresh condition. It would seem that it must have attained maturity last autumn and been waiting for next July before emerging into the open, but I am not aware that this habit is usual with *Lucanus*, nor, so far as I know, does the species retire into hibernation to make a second appearance the following year, as does *Cetonia*.

Another surprise for February was a living specimen of *Clytus arietis* L., found indoors at Wimbledon by Mr. R. W. Hayman. This had no doubt been hibernating in the adult state in its pupal chamber, as do many Longicorns, perhaps in a log brought in for firewood, and had mistaken the warmth of central heating for the balmy days of May.—K. G. BLAIR, 11 Durrington Park Road, S.W.20: *February 20th*, 1939.

THE MALLOPHAGA (BITING-LICE) RECORDED FROM THE PACIFIC ISLANDS.

BY GORDON B. THOMPSON.

(*Continued from p.* 18)

63. *Philopterus minor* (Kellogg and Kuwana).

Docophorus validus minor Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 460-461.

D. validus minor Kellogg and Kuwana, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 316.

Philopterus minor (Kellogg and Kuwana), Harrison, 1916, Parasitology, IX, p. 99.

Recorded hosts: *Puffinus obscurus subalaris* Ridgway; *Nesomimus parvulus barringtoni* Rothschild.

Probable true host: *Puffinus obscurus subalaris* Ridgway.

Localities: Galapagos Is., Narborough I., Albemarle I., Barrington I., Culpepper I.

64. *Philopterus numeniicola* Johnston and Harrison.

Philopterus numeniicola Johnston and Harrison, 1912, Trans. N.Z.Inst., XLIV, pp. 372-373, f. 11, 12.

Recorded host: *Phaeopus phaeopus variegatus* (Scop.).

Locality: Kermadec Is.

65. *Philopterus platycephalus* (Kellogg and Kuwana).

Docophorus platycephalus Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 461-462, Pl. 28, f. 1.

D. platycephalus Kellogg and Kuwana, Kellogg, 1906, Trans. Amer. ent. Soc. XXXII, p. 316.

Philopterus platycephalus (Kellogg and Kuwana), Harrison, 1916, Parasitology, IX, p. 102.

Recorded hosts: *Oceanites gracilis galapagoensis* Lowe; *Geospiza f. fuliginosa* Gould.

Probable true host: *Oceanites gracilis galapagoensis* Lowe.

Localities: Galapagos Is., Albemarle I., Wenman I.

66. *Philopterus sturni* (Schrank).

Pediculus sturni Schrank, 1776, Beyträge zur Naturgeschichte, p. 118, Pl. 5, f. 11.

Docophorus leontodon Nitzsch in Burmeister, 1838, Handbuch der Entomologie, ii, p. 425.

Philopterus leontodon (Nitzsch), Johnston and Harrison, 1912, Trans. N.Z. Inst., XLIV, p. 368.

Recorded host: *Sturnus vulgaris* Linn.

Locality: Kermadec Is.

67. *Philopterus subflavescens* (Geoffroy).

Pediculus subflavescens Geoffroy, 1762, Hist. Abr. Ins. ii, p. 599.

Docophorus communis Nitzsch in Burmeister, 1838, Handbuch der Entomologie, ii, p. 425.

D. communis Nitzsch, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 464.

D. communis Nitzsch, Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, p. 156.

Philopterus subflavescens (Geoffroy), Harrison, 1916, Parasitology, IX, p. 105.

Recorded hosts: *Geospiza f. fuliginosa* Gould; *Geospiza* sp.; *Carpodacus mexicanus obscurus?*; ? *Uroloncha punctulata nisoria* (Temm. and Lang.) (*Munia nisoria*).

Localities: Galapagos Is., Narborough I., Hood I.; Hawaiian Is., Maui I.

68. *Philopterus syrnii* (Packard).

Docophorus syrnii Packard, 1872, Ann. Rept. U.S. Geol. Surv., pp. 733-734, f. 62.

D. speotyti Osborn, 1896, Div. of Ent., U.S. Dept. Agr. Bull. 5 (n.s), pp. 222-223, f. 144.

D. speotyti Osborn, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 317.

Philopterus syrnii (Packard), Harrison, 1916, Parasitology, IX, p. 105.

Recorded host: *Speotyto* sp.

Locality: Galapagos Is.?

69. *Philopterus taurocephalus* (Kellogg).

Docophorus taurocephalus Kellogg, 1896, Proc. Calif. Acad. Sci., VI, Ser. 2, pp. 471-473, Pl. 65, f. 1.

D. taurocephalus Kellogg, 1906, Trans. Amer. ent. Soc. XXXII, p. 316.

Philopterus taurocephalus (Kellogg), Harrison, 1916, Parasitology, IX, p. 105.

Recorded host: *Puffinus obscurus subalaris* Ridgway.

Probable true host: *Buteo galapagoensis* (Gould).

Locality: Galapagos Is., Culpepper I.

70. *Saemundssonia albemarlensis* (Kellogg and Kuwana).

Docophorus albemarlensis Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 465-466, Pl. 28, f. 5.

D. albemarlensis Kellogg and Kuwana, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 316.

Philopterus albemarlensis (Kellogg and Kuwana), Harrison, 1916, Parasitology, IX, p. 87.

Recorded hosts: *Camarhynchus affinis* Ridgway; *Phaëthon aethereus* Linn.; *Sterna fuscata crissalis* (Lawrence).

Probable true host: *Sterna fuscata crissalis* (Lawrence).

Localities: Galapagos Is., Albemarle I., Seymour I., Culpepper I.

71. *Saemundssonia gonothorax* (Giebel).

Docophorus gonothorax Giebel, 1871, Z. ges. Naturw., XXXVII, p. 450.

Pediculus lari O. Fabricius, 1780, Fauna Groenlandica, p. 219.

Docophorus lari Denny, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 463.

D. lari Denny, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 317.

Philopterus gonothorax (Giebel), Harrison, 1916, Parasitology, IX, p. 95.

Saemundssonia gonothorax (Giebel), Timmermann, 1936, Zool. Anz., Bd. 114, pp. 97-100, f. la.

Recorded host: *Creagrus furcatus* (Neboux).

Locality: Galapagos Is., Culpepper I.

72. *Saemundssonia melanocephala* (Nitzsch).

Docophorus melanocephalus Nitzsch in Burmeister, 1838, Handbuch der Entomologie, ii, p. 426.

D. melanocephalus Burmeister, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 462.

D. melanocephalus Burmeister, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 316.

Philopterus melanocephalus (Nitzsch in Burmeister), Harrison, 1916, Parasitology, IX, p. 99.

P. melanocephalus (Nitzsch), Timmermann, 1935, Zool. Anz., Bd. 114, p. 98.

Recorded hosts: *Sterna fuscata crissalis* (Lawrence); *Anous stolidus galapagensis* Sharpe; *Creagrus furcatus* (Neboux); *Nesomimus macdonaldi* Ridgway.

Probable true hosts: *Sterna fuscata crissalis* (Lawrence); *Anous stolidus galapagensis* Sharpe; *Creagrus furcatus* (Neboux).

Localities: Galapagos Is., Clipperton I., Narborough I., Gardner I., Wenman I., Culpepper I.

73. *Saemundssonia peristictus* (Kellogg and Kuwana).

Docophorus peristictus Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 462-463, Pl. 28, f. 2.

D. peristictus Kellogg and Kuwana, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 316.

Philopterus peristictus (Kellogg and Kuwana), Harrison, 1916, Parasitology, IX, p. 101.

Recorded hosts: *Sterna fuscata crissalis* (Lawrence); *Dendroica petechia aureola* (Gould); *Nesomimus parvulus barringtoni* Rothschild; *Puffinus obscurus subalaris* Ridgway.

Probable true host: *Sterna fuscata crissalis* (Lawrence).

Localities: Galapagos Is., Clipperton I., Albemarle I., Seymour I.

74. *Saemundssonia phaëthonus* (Howard).

Docophorus phaëthonus Howard, 1890, Proc. U.S. nat. Mus., XII, p. 189.

D. phaëtonus Osborn, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 316.

Philopterus phaëtonus (Osborn), Harrison, 1916, Parasitology, IX, p. 101.

Recorded host: *Phaëthon aethereus* Linn.

Localities: Galapagos Is., Daphne I., Indefatigable I., Wenman I.

75 *Saemundssonia snyderi* (Kellogg and Paine).

Docophorus snyderi Kellogg and Paine, 1910, Ent. News, XXI, pp. 124-125, f. 1, 2.

Philopterus snyderi (Kellogg and Paine), Harrison, 1916, Parasitology, IX, p. 104.

P. snyderi (Kellogg and Paine), Ferris, 1932, Bull. Bishop Mus., Honolulu, 98, pp. 71-72, f. 20.

Recorded hosts: *Melanosterna lunata* (Peale); *Onychoprion fuscatus* (Linn.).

Localities: Laysan I.; Marquesas Is., Hatutu.

76. *Anatoecus dentatus* (Scopoli).

Pediculus dentatus Scopoli, 1763, Ent. Carn., p. 383.

Docophorus icterodes Nitzsch in Burmeister, 1838, Handbuch der Entomologie, ii, p. 424.

D. icterodes Nitzsch, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 462.

D. icterodes Nitzsch, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 317.

Philopterus dentatus (Nitzsch), Harrison, 1916, Parasitology, IX, p. 93.

Anatoecus icterodes (Nitzsch), Cummings, 1916, Proc. Zool. Soc., Lond., pp. 655-656, f. 7B, 10, 12.

Recorded hosts: *Sterna fuscata crissalis* (Lawrence); '*Anas versicolor.*'

Probable true host: *Poecilonetta galapagensis* Ridgway.

Localities: Galapagos Is., Clipperton I., Indefatigable I.

77. *Degeeriella birostris* (Giebel).

Nirmus birostris Giebel, 1874, Insecta Epizoa, p. 174.

N. gloriosus Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 467-468, Pl. 29, f. 1 (part).

N. gloriosus Kellogg and Kuwana, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 317.

N. gloriosus Kellogg and Kuwana, Kellogg and Paine, 1910, Ent. News, XXI, p. 125.

N. gloriosus Kellogg and Kuwana, Kellogg and Mann, 1912, Ent. News, XXIII, p. 58.

Degeeriella gloriosa (Kellogg and Kuwana), Harrison, 1916, Parasitology, IX, p. 114.

D. gloriosa (Kellogg and Kuwana), Ferris, 1932, Bull. Bishop Mus., Honolulu, 98, pp. 68-69, f. 18.

D. birostris (Giebel), Bedford, 1936, Onderstepoort J. vet. Sci., VII, p. 88.

Recorded hosts: *Sterna fuscata crissalis* (Lawrence); *Anous stolidus galapagensis* Sharpe; *Geospiza f. fuliginosa* Gould; *Camarhynchus affinis* Ridgway; *Progne modesta* (Neboux); *Nesomimus parvulus barringtoni* Rothschild; *Melanosterna lunata* (Peale); *Onychoprion fuscatus* (Linn.).

Probable true hosts: *Sterna* spp. etc.

Localities: Galapagos Is., Clipperton I., Albemarle I., South Seymour I., Barrington I.; Laysan I.; Marquesas Is., Hatutu (Hatutaa).

78. *Degeeriella curvilineata* (Kellogg and Kuwana).

Nirmus curvilineata Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 470-471, Pl. 29, f. 4.

Recorded hosts: *Nesopelia g. galapagoensis* (Gould); *Oceanites gracilis galapagoensis* Lowe.

Probable true host: ?

Localities: Galapagos Is., Narborough I., Albemarle I.

79. *Degeeriella diaprepes* (Kellogg and Chapman).

Nirmus diaprepes Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, pp. 158-159, Pl. 13, f. 4.

Recorded host: *Vestiaria coccinea* (Forster).

Locality: Hawaiian Is., Hilo.

80. *Degeeriella galapagensis* (Kellogg and Kuwana).

Nirmus galapagensis Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 471-472, Pl. 29, f. 5.

N. galapagensis Kellogg and Kuwana, 1906, Trans. Amer. ent. Soc., XXXII, p. 317.

Recorded hosts: *Geospiza f. fuliginosa* Gould; *G. fortis* Gould; *G. conirostris conirostris* Ridgway; *Nesomimus macdonaldi* Ridgway; *N. p. parvulus* (Gould); *N. p. barringtoni* Rothschild; *N. melanotis* Gould; *Cactospiza pallida producta* (Ridgway); *Platyspiza crassirostris* (Gould); *Pyrocephalus nanus intercedens* Ridgway; *P. dubius* Gould; *Certhidea olivacea* Gould; *Myiarchus magnirostris* (Gray); **Coccyzus melanocoryphus* Vieillot; **Actitis macularia* (Linn.); **Procellaria tethys* (Bonaparte); **Anous stolidus galapagensis* Sharpe.

Probable true hosts: All the above species except those with asterisk *.

Localities: Galapagos Is., Albemarle I., Chatham I., Narborough I., Hood I., Barrington I., Wenman I., Indefatigable I., James I.

81. *Degeeriella interposita* (Kellogg).

Nirmus interpositus Kellogg, 1899, Occ. Pap. Calif. Acad. Sci., VI, pp. 23-25, Pl. 2, f. 7.

N. interpositus Kellogg, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 475.

Recorded hosts: *Geospiza f. fuliginosa* Gould; *G. fortis* Gould; *Nesomimus p. parvulus* (Gould); *N. p. barringtoni* Rothschild; *Platyspiza crassirostris* (Gould).

Probable true host: *Dendroica petechia aureola* (Gould).

Localities: Galapagos Is., Albemarle I., Narborough I., Barrington I.

82. *Degeeriella lepida* (Kellogg and Kuwana).

Nirmus lepidus Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 473-474, Pl. 29, f. 7.

Recorded hosts: *Geospiza f. fuliginosa* Gould; *Nesomimus parvulus barringtoni* Rothschild; *Sterna fuscata crissalis* (Lawrence).

Probable true host: *Sterna fuscata crissalis* (Lawrence).

Localities: Galapagos Is., Narborough I., Barrington I., Clipperton I.

(*To be continued.*)

A SELECTED AND CLASSIFIED BIBLIOGRAPHY OF J. J. WALKER'S PUBLICATIONS, 1872—1939.

BY SIR EDWARD B. POULTON, D.SC., F.R.S.

I. PAPERS FROM THE ENTOMOLOGIST'S MONTHLY MAGAZINE ARRANGED ACCORDING TO SUBJECT.

The publications here quoted were selected from a full list carefully prepared by Miss A. Z. Turner, to whom I wish to express my sincere thanks. Her list contains, in addition, notes and papers in this journal by the same author on the following subjects:—162 on Coleoptera (2 foreign, 1 Irish, the remainder British), 27 on Lepidoptera (1 foreign, 1 Irish, the remainder British), 9 on British entomology, 9 on various British insects and 2 miscellaneous.

MIGRATION, IMMIGRANT INSECTS, &c.

Anosia plexippus L. (*Danais archippus* F.): a study in geographical distribution [1886, **22**, 217-24; see also 1886, **23**, 162; 1914, **50**, 181-93, 224-37, 290; 1915, **51**, 294-5; 1928, **64**, 90]. *Colias edusa,* &c., at Portland [1885, **22**, 111; see also 1893, **29**, 211; 1896, **32**, 226; 1898, **34**, 252-3; 1899, **35**, 235-6; 1904, **40**, 256; 1908, **44**, 207; 1911, **47**, 217; 1913, **49**, 213-4; 1914, **50**, 15-6; 1920, **56**, 231]. *Pyrameis virginiensis* Drury (*huntera* F.) in the Isle of Wight [1908, **44**, 91]. Immigrant Lepidoptera in 1912 [1912, **48**, 197-8; see also 1894, **30**, 162; 1907, **43**, 158-9; 1908, **44**, 157; 1911, **47**, 160; 1928, **64**, 186-7; 1931, **67**, 160, 246]. *Polygonia c-album* and other Lepidoptera in the Oxford district . . . [1921, **57**, 260-1; see also 1934, **70**, 239-40]. On the Coleoptera, etc., of the Faroe Islands [1938, **74**, 77-82, 114]. Some records of insects from St. Kilda [1932, **68**, 146-50]. On the occasional occurrence of butterflies in Iceland . . . [1922, **58**, 1-7]. Insects at sea [1931, **67**, 211-32, 254-68].

OBSERVATIONS ON INSECTS DURING VOYAGES.

Notes on Mediterranean Hemiptera-Heteroptera [1875, **12**, 79-81]. Notes on the butterflies of Port Baklar, Turkey [1879, **15**, 193-6]. Coleoptera found in salt water [1885, **22**, 45]. A year's insect-hunting at Gibraltar [1888, **24**, 175-84; see also **24**, 232]. Abundance of *Ocneria dispar* L., near Algeçiras [1888, **25**, 65]. Three days at Ferrol [1889, **25**, 389-92]. Notes from the Red Sea [1890, **26**, 258-61]. Entomological notes from Aden and Colombo [1890, **26**, 284-6]. On the genus *Halobates* Esch. and other marine Hemiptera [1893, **29**, 227-32; see also **29**, 252; 1900, **36**, 115]. Entomological collecting on a voyage to the Pacific [1881-4, **18**, 81-6; **19**, 22-8, 257-9, 274-8; **20**, 91-6, 222-5; **21**, 115-20]. Entomological notes from Port Darwin, &c. [1891, **27**, 233-9, 281-5; see also 1892, **28**, 55-9, 153-7, 197-203]. Id. from the Eastern Archipelago [1893, **29**, 24-30, 57-61]. Water-beetles from the Island of Tongatábu [1897, **33**, 11]. Antipodean field notes, I-III [1902, **38**, 189-203; 1904, **40**, 24-8, 68-77, 115-26, 149-54; 1905, **41**, 216-20, 227-33, 266-70; 1906, **42**, 22-7, 50-5]. *Silvanus bidentatus* Fab., in New Zealand: synonymical note [1912, **48**, 90].

INSECT ASSOCIATIONS: INSECTS AND PLANTS.

Notes on ant's-nest beetles at Gibraltar and Tangier . . . [1889, **25**, 374-8;

see also 1913, **49**, 136; 1914, **50**, 247-8; 1920, **56**, 209-10]. Histeridae, &c., associated with owls [1896, **32**, 260]. *Medon castaneus* Grav., and other Coleoptera in moles' nests near Oxford [1907, **43**, 82-3]. Flies riding on beetle-back [1896, **32**, 161-2]. Carrion beetles attracted by *Arum dracunculus* [1888, **25**, 33]. Species of *Cionus* on *Buddleia globosa* [1914, **50**, 248]. *Buddleia* as an attraction to Lepidoptera [**50**, 248-9; see also **50**, 289-90].

Important Collectons in Melbourne and Oxford.

The 'Curtis' Collection of British Insects [Melbourne] [1901, **37**, 76; see also 1904, **40**, 187-94]. Types of Siphonaptera in the Daleian Collection [1906, **42**, 182]. Some notes on the Lepidoptera of the 'Dale Collection' of British Insects, now in the Oxford University Museum [1907, **43**, 93-101, 130-4, 154-8; 1909, **45**, 106-110, 175-81; 1910, **46**, 185-7]. Some insects of historic interest in the 'Dale' Collection of exotic Lepidoptera at Oxford [1927, **63**, 123-8]. The Dale Collection of British Coleoptera [1932, **68**, 21-8, 71-5, 105-8]. The British Hemiptera-Heteroptera of the Dale Collection [1933, **69**, 234-45]. The British Lepidoptera of the Oxford University Museum (Hope Department) [1915, **51**, 126].

II. Publications by J. J. Walker in journals other than the Entomologist's Monthly Magazine, or independently.

The following classified list has been drawn up from the valuable results of Miss Turner's search over a wide field, and here, too, I desire to record my deep indebtedness. The list will, I believe, be considered especially valuable, not only for the great interest of the observations therein recorded, but for the evidence of the author's kindly wish to show sympathy with the editors of publications devoted to natural history and especially with those who were working in the localities which he had visited.

Insect Distribution and Natural History of the Oxford District.

Presidential Address: The fringes of butterfly life [1920, *Proc. Ent. Soc. Lond.*, **1919**, lxxxix-cxvii]. Id.: Some aspects of insect life in New Zealand [1921, ibid., **1920**, cvii-cxxxviii]. The natural history of the Oxford district [Oxford,-1926, edited for Brit. Ass.]. A sketch of the entomology of the Oxford district [1912, Guide, *Oxford Int. Congr. Ent.*, 1-28].

British Lepidoptera.

The butterflies of the Chatham district [1898, *Ent. Rec.*, **10**, 100-3]. *Pyralis lienigialis* at Oxford [1908, *Proc. Ent. Soc. Lond.*, **1908**, iii]. Scarce varieties of *Zonosoma pendularia* [1915, *ibid.*, **1915**, xlv]. Notes on local Lepidoptera [1915, *J. Torquay Nat. Hist. Soc.*, **2**, 25-8 (with H. Lupton)]. The Comma butterfly, *Polygonia c-album* (Linn.) . . . [1938, *Trans. Soc. Brit. Ent.*, **5**, 281-90].

British Coleoptera.

Preliminary list of Coleoptera observed in the neighbourhood of Oxford from 1819-1907 [1907-30, *Rep. Ashmol. Nat. Hist. Soc.*, **1906**, 49-100; see also Suppls., **1907**, 49-60; **1909**, 59-70; **1911**, 45-54; **1914**, 62-8; **1920**, 23-31; **1929**, 32-6; and interim reports, 1910-38]. Captures of Coleoptera in Ireland during the spring of 1895 [1895, *Irish Nat.*, **4**, 207-12, 289-91]. A list of Coleoptera of the Rochester district [1897-1900, *Rochester Nat.*, **2**, 441-650]. The Coleoptera of an old ash-tree [1899, *Ent. Rec.*, **11**, 20-2]. Practical hints on the formation of a collection of Coleoptera [1899, *Rep. S. East. Un. Sci. Soc.*, **1899**, 18-35]. *Sitaris muralis* at Oxford [1907, *Proc. Ent. Soc. Lond.*, **1907**, xlix]. Larvae of *Sitaris muralis* [1908, ibid., **1908**, iii]. Late autumn Coleoptera [1909, *ibid.*, **1909**, lxxii-lxxiii]. A Coleopteron new to Britain [1912, *ibid.*, **1912**, xxv]. Coleoptera from Oxford [1912, *ibid.*, **1912**, lxxxvii]. A British example of *Cryptocephalus primarius* [1927, *ibid.*, **2**, 33-4]. An annotated list of the Coleoptera of the Isle of Sheppey [1932, *Trans. Ent. Soc. S. Engl.*, **7**, 81-140]. Additional records of Coleoptera from the Isle of Sheppey [1932, *J. Ent. Soc. S. Engl.*, **1**, 37-8].

OBSERVATIONS ON NATURAL HISTORY, CHIEFLY LEPIDOPTERA, IN MANY PARTS OF THE WORLD.

Notes on Lepidoptera from the region of the Straits of Gibraltar [1890, *Trans. Ent. Soc. Lond.*, **1890**, 361-91]. A preliminary list of the butterflies of Hong Kong . . . [1895, *ibid.*, **1895**, 433-77]. The bird-life of Adèle Island, North-west Australia [1892, *Ibis* (6), **4**, 254-61]. A visit to Damma Island, East Indian Archipelago [1894, *Ann. Mag. Nat. Hist.* (6), **14**, 49-71, 98-113]. A flying visit to Dirk Hartog and the Houtman's Abrolhos Islands, Western Australia [1897, *Zoologist* (4), **1**, 293-303]. Insect-catching grass [1912, *Proc. Ent. Soc. Lond.*, **1912**, lxxxvii]. An imported American Syntomid [1914, *Proc. Ent. Soc. Lond.*, **1913**, lxx]. Butterflies attacked by birds [1929, *ibid.*, **4**, 71]. Notes on a Satyrine butterfly (*Satyrus azorinus*, Strecker) from the Azores [1930, *ibid.*, **5**, 77-81]. A Peruvian Lycaenid butterfly eaten by a bird [1931, *ibid.*, **6**, 19].

Wykeham House, Oxford.
March 18th, 1939.

Additional records of British species of Triphleps (Hem., Anthocoridae).—In the course of his paper on *Triphleps laevigata* Fieb. (1939, Ent. Mon. Mag., **75**: 29), Mr. H. Britten states that he omitted to keep data for several collections examined by him. He has asked me to publish the following localities additional to those given by him.

T. nigra Wolff.—Staffordshire: Cannock Chase, 16.x.1929, 16.viii.1933; Maer Woods, 30.ix.1933.

T. laevigata Fieb.—Hertfordshire: Stevenage, 14.ix.1933.

T. majuscula Reut.—Staffordshire: Forton, 29.vii.1937. Shropshire: Ellesmere, 16.viii.1935. Kent, East: Folkestone Warren, 14.v.1934.

T. minuta L.—Staffordshire: Aqualate Mere, 20.viii.1937.

As regards *T. nigra*, I have always taken this amongst ling with one exception—from nettles behind the sandhills at Deal, a locality already recorded by Britten, ex coll. Butler. Personally I was quite clear in my own mind as to the identity of this species. The mistake I did make, however, was to place my *T. laevigata* under *T. minuta*, which it somewhat resembles in size and colour. On the only two occasions when I have taken *T. laevigata* it has been in abundance on garden flowers, at Madeley, Staffs, on Michaelmas Daisies, and at Stevenage on a mixed bed of half-hardy annuals.—H. W. DALTRY, F.R.E.S., Bar Hill, Madeley, Crewe: *February 7th*, 1939.

A NEW BRITISH *OPIUS* (HYM., BRACONIDAE).

BY G. E. J. NIXON, B.A.

Some months ago Mr. E. Cameron, of the Imperial Institute of Entomology, Farnham Royal, handed me an interesting species of the genus *Opius* for identification. A careful search through the literature seemed to suggest that the insect was new, and as Mr. Cameron will shortly publish information concerning its biology I have chosen to regard it as a new species, the description of which I give below.

SUBFAMILY OPIINAE.

Opius ilicis sp.n.

♂ ♀. Head brownish-black above; the orbits, face, temples and cheeks pale brownish-yellow; sometimes the face is suffused with darker colouring. Thorax brownish-black; mesopleurae below sometimes suffused with reddish, as is also the mesosternum. Legs unicolorous, pale yellow; hind tibiae at most slightly more opaque at apex but never blackened. Basal two-thirds of tergite (2+3) more or less pale brownish-yellow. In examples caught wild the yellow colouring is more intense, almost ochreous, and the black patch on the top of the head tends to be reduced in size. On the whole there seems to be considerable variation in the colour of the head and the abdomen.

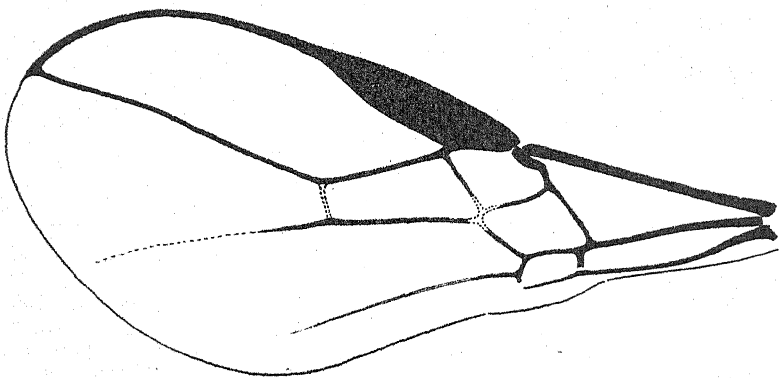


FIG. 1.—*Opius ilicis* sp.n., ♀, fore wing.

♀. *Head*: Apex of clypeus widely separated from the mandibles. Mandibles with their lower margin simple; no trace whatever of an angulation near the base. Antennae with 23—29 segments (23—26 in 5 bred ♀♀; 26—29 in 9 wild ♀♀). *Thorax*: Notauli virtually wanting, showing anteriorly as short, deep, more or less smooth niches; the anterior margin of these niches is raised so that the mesonotum has prominent 'shoulders.' In bred ♀♀ the mesonotum is feebly longitudinally impressed; this feature is much less in evidence in wild examples. A few long hairs are present along the imaginary course of the notauli, especially posteriorly. No trace of a fovea against the posterior margin of the mesonotum. Posterior margin of the scutellum margined by a long, narrow, finely crenate groove. Mesopleurae with only a feeble, completely smooth impression. Propodeum predominantly smooth and shining. Fore wings: radius leaving the stigma far proximal to middle; nervus parallelus arising from discoidalis very near middle of outer side of second discoidal cell (fig. 1). *Abdomen*: Petiole about 1½ times as long as its apical width, finely rugose outside the area enclosed by the basal carinae and with a longitudinal element in the sculpture. Each of the tergites with a fairly even row of long cilia. Ovipositor projecting slightly beyond the apex of the abdomen (fig. 2).

♂. Antennae with 25—28 segments (18 ♂♂).

Length: ♂, ♀, about 1.8 mm.

TYPE in the British Museum (Nat. Hist.).

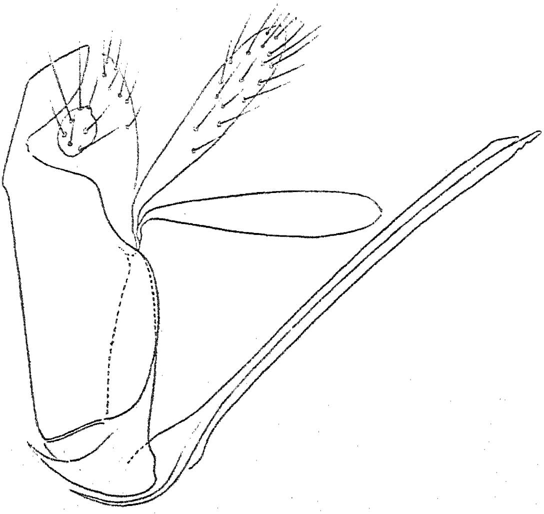


FIG. 2.—*Opius ilicis* sp.n., ♀, apical tergites and genitalia.

ENGLAND: Berks (Sunninghill), 1 ♂, 1 ♀, bred 26.vi.1936 from *Phytomyza ilicis* Curt. on holly, *E. Cameron*; (Windsor Forest), 1 ♀, 5.viii.1931, *G. Nixon*; Bucks (Farnham Royal), 4 ♂♂, 4 ♀♀ (one female the *type*), bred vi.1938 from *Phytomyza ilicis* Curt. on holly, *E. Cameron*; Hants (Brockenhurst), 1 ♀, 25-29.vi.1933, *G.N.*; Surrey (Ashtead), 3 ♂♂, 4 ♀♀, 12.viii.1931; 1 ♂, 25.viii.1929; 1 ♂, 30.vii.1932; 2 ♂♂, 6.viii.1932; 1 ♂, 1 ♀, 12-19.viii.1933, *G.N.*; (Horsley), 1 ♂, 14.vi.1930, *G.N.*; Sussex (Hellingly), 1 ♂, 15-29.viii.1936, *A. M. Low*; Yorks (Kirkstall), 1 ♂, 2.vii.1932, *A.M.L.* IRELAND: Dublin (Glenasmole), 1 ♀, 30.viii.1935, *J. F. Perkins*; Kildare (Kilkea Park), 1 ♂, 2 ♀♀, 4.vii.1937, *A. W. Stelfox.*

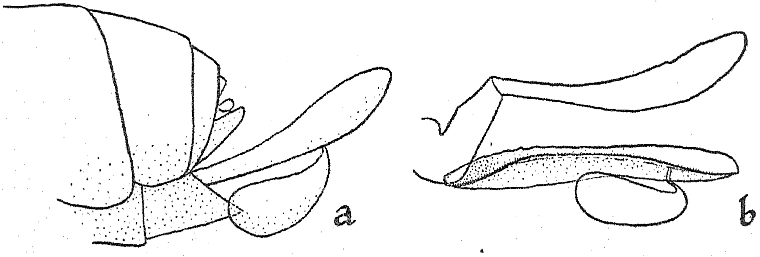
This species is superficially very like *Opius compar* Marshall, the type of which is in the British Museum. The most obvious differences between the two species are as follows: *O. compar* has the head thicker, less transverse, a small fovea against the posterior margin of the mesonotum, and the nervus parallelus arising from nearer the lower exterior angle of the 2nd discoidal cell. I have not examined the mandibles of *O. compar* Marsh., since the only available specimen, the type female, is mounted flat on a card. Colour, that is, the contrast between yellow and dark markings, is a much more striking and characteristic feature of *O. ilicis* sp.n. than of *O. compar* Marsh., and is a very valuable guide to the identification of the species.

Imperial Institute of Entomology,
British Museum (Natural History),
London, S.W.7.
March 14th, 1939.

ON THE AFFINITIES OF THE GENUS *ECLYTUS* HOLMGREN (HYM., ICHNEUMONIDAE).

BY J. F. PERKINS, B.SC.

Eclytus was described by Holmgren in 1855 and placed by him with *Perilissus* in his third division of the Tryphonides Homalopi. Thomson and Schmiedeknecht placed it in the sub-tribe Perilissina of the tribe Mesoleptini. Morley placed it in his sub-tribe Mesoleptini of the tribe Tryphonides. However, the females of the species of this genus that the author has been able to examine all carry a single large stalked egg, as do *Tryphon* and the related genera, and undoubtedly *Eclytus* is related to this genus. In the British Museum is a female of *E. ornatus* Holmgren, determined by Dr. A. Roman. This species is the genotype. The specimen carries a large egg in the hypopygium. The accompanying diagrams were made from a specimen of *E. fontinalis* Holmgren. These two species, as well as *E. exornatus* Gravenhorst, are recorded from Britain.



Eclytus fontinalis Holmgren, ♀. *a*, apex of abdomen; *b*, ovipositor and sheathes seen laterally.

The Tryphonini and Ctenisicini, as defined by Schmiedeknecht, form a very distinct group. They differ from the rest of his Tryphoninae in having these large eggs which are carried on the ovipositor, usually singly, but in some genera in a cluster. In almost all females of this group which have been examined, eggs have been found, though they may be concealed within the hypopygium, and this forms an excellent means of distinguishing at least the females of this group. When the eggs are laid they are attached to the larvae of sawflies by the stalk, and the larvae feed externally on the host larva. This habit is unknown in other Ichneumonids, and it would seem more natural, therefore, that these two tribes alone should form the Tryphoninae. The remaining genera of the Tryphonides Homalopi will later be split up into a number of distinct sub-families.

REFERENCES.

HOLMGREN, A. E. 1855. *Sv. Ak. Handl.*, **1** : 93—246.

KERRICH, G. J. 1936. *Proc. R. ent. Soc.* (A), **11** : 108—110.

MORLEY, C. 1911. *The Ichneumons of Great Britain*, **4** (Tryphoninae). London.

SCHMIEDEKNECHT, O. 1911—27. *Opuscula Ichneumonologia*, **5** (Tryphoninae). Blankenburg.

Department of Entomology,
British Museum (Natural History),
London, S.W.7.
March 10th, 1939.

Formica rufa L. (Hym., Formicidae) once more protected by German Law.—A new law forbidding the destruction of nests of *Formica rufa* L. has recently been passed in Germany.* In the year 1880 Ratzeburg, having proved that the *F. rufa* protected the trees adjoining their nests from other insects, secured the passing of a Prussian law forbidding the systematic destruction of *F. rufa* nests by bird-fanciers. This law provided for a fine of one hundred marks or one month's imprisonment as a punishment for anyone found collecting the cocoons, or, so Wheeler says,† wantonly disturbing the nest. Whether this Prussian law ever became German law, as is suggested by references ‡ to it as such, seems doubtful, though the Prussians, being prominent and powerful, might have brought about its adoption by the German state as a whole. I do not, however, think this is likely, for the people of those days did not worry much about economic entomology. It seems more probable that the quoting of this law as 'German' is an error. Thus this is the first time that a law protecting these ants has been, to our knowledge, enforced by national legislation in any country, and the German Government should be heartily commended for taking such a step forward in protecting what is one of our most beneficial insects.—B. D. W. MORLEY, 16 Madeira Road, Bournemouth: *February 3rd*, 1939.

* Decree by Oberste Naturschutzbehörde, March 18th, 1936.

† *Sec.* Donisthorpe, H. St. J. K., 1927, British Ants, Lond. : 295.

‡ Donisthorpe, *loc. cit.*; Maeterlinck, M., 1930, The Life of the Ant, Lond. : 149.

THREE NEW SPECIES OF LAMELLICORN BEETLES FROM THE CAROLINE ISLANDS.

BY GILBERT J. ARROW
British Museum (Natural History).

The insect fauna of the Caroline Islands, as of most of the Micronesian Pacific islands, is very little known, and a small collection of Lamellicorn beetles sent to me for examination by the Bishop Museum in Honolulu shows it to be of great interest. The eight species include two (*Gonatas carolinensis* Gravely and *Aegus alternatus* Fairmaire) previously recorded from these islands alone and four hitherto unknown, one of the latter belonging to a new genus. Three of the new forms are described here, the fourth, belonging to the family Lucanidae, in which the range of variation in the males is so great, being insufficiently represented for adequate description from a single pair. The types of the three new species are in the British Museum, Honolulu, and co-types of each are in the British Museum.

The list of Lamellicorn Coleoptera in the collection is as follows :—

PASSALIDAE : *Gonatas carolinensis* Gravely.
LUCANIDAE : *Aegus alternatus* Fairmaire, *Dorcus carolinensis* n.sp., *Dorcus* sp.
APHODIIDAE : *Saprosites pygmaeus* Harold.
DYNASTIDAE : *Anoronotum rufum* n.sp.
RUTELIDAE : *Parastasia guttulata* Fairmaire.
MELOLONTHIDAE : *Lepidiota carolinensis* n.sp.

LUCANIDAE.

Dorcus carolinensis n.sp.

Black, with dark red legs, smooth and shining, except the head and pronotum of the male, which are dull; short and broad, with slender but not long legs, short antennae and very short mandibles in both sexes. The upper surface of the body is finely punctured (except the head of the male), the punctures of the pronotum very fine and rather sparse, those of the elytra fairly close and some of them forming imperfect rows upon the outer half. The eyes are not very small, the canthus extending to the middle of the eye, but not at all prominent in either sex. The sides of the pronotum are feebly rounded in front, almost straight to the lateral angle, which is distinct but not sharp, and straight again to the hind angle, which is obtuse. The base is finely margined. The shoulders of the elytra are sharp-angled. The prosternum is not compressed or pointed behind. The front tibia dilates a little to the end, is irregularly serrate externally and feebly bifurcated at the tip.

Length (with mandibles) 12—14.5 mm., (without mandibles) 11—13 mm., breadth 5—6 mm.

PONAPE I.: Kolonie (Feb.), Yamataman-Sakil (March); PALAO I.: Ngeremlengui (April).

In its diminutive size and the very slight development of the mandibles of the male, this can only be compared with the Philippine *D. parvulus* Hope & Westw. and the Indian *D. humilis* Arrow. It has the smooth exterior of the latter, *D. parvulus,* to which it is more nearly related, having its surface very closely punctured and dull.

D. carolinensis is relatively shorter and broader than either of the forms mentioned above. Both male and female are smooth and shining, with a light puncturation of the upper surface, which is absent from the head of the male. The front tibia in both sexes has a coarsely serrate outer edge, that of the male is not more slender than that of the female and the terminal fork is very short. The tibia of the female ends in three very short lobes. The mandibles of the male are little longer than those of the female, but they are more slender and, in the largest specimen, have a tooth before the middle and another beyond it. In a small male there is only a single blunter tooth beyond the middle.

There is probably a nearer relationship, although less resemblance, to the Papuan *D. intermedius* Gestro, of which fully developed specimens are four times the length of *D. carolinensis,* although small ones are only half as long.

D. parvulus has been made the type of a separate genus (*Metallactulus*) on account of the form of the tip of the mandible of the male, but this can no longer be regarded as a sufficient reason. The mandibles in females of *Dorcus* scarcely differ, while those of the males show almost endless diversity.

DYNASTIDAE.

Anoronotum n.g.

Clypeus produced in front, narrow and truncate. Mandibles prominent, forming rounded lobes externally, but without biting parts internally. Maxillae without teeth or inner lobe, the outer lobe clothed with long hairs, the palpus with a long terminal joint. Mentum narrow and rounded in front, the palpus inserted at the side, its terminal joint long and narrow. Joints 3—7 of the antenna very short, the last three rather long. Legs fairly long, the front tibia three-toothed, the middle and hind tibiae truncate at the end, with very short, broad spurs, the tarsi slender, the basal joint a little shorter than the next, triangular. Prosternum not produced behind the front coxae. Propygidium slightly produced in the middle and bearing broken and not very close transverse ridges.

GENOTYPE: *Anoronotum rufum* n.sp.

This must be regarded as a degenerate form, with reduced armature and mouth-parts. The ridges upon the propygidium seem to be the remnants of a stridulatory file.

Anoronotum rufum n.sp.

Deep red, with the pronotum, sternum, femora and hind coxae yellowish-red; very smooth and shining above, the legs and lower surface clothed with long, not very abundant, hair; narrow, parallel-sided, not very convex. Eyes large, clypeus finely rugose, produced in front and behind, with a small tubercle at the posterior end. Pronotum very lightly punctured in front, very smooth behind, the front angle acute, the lateral margin nearly straight in front, gently curved behind, the hind angle very obtuse. Elytra long, very smooth, almost unpunctured, except near the hind margin, but with light traces of double longitudinal lines. Pygidium convex, very smooth, unpunctured.

Length 28 mm., breadth 15 mm.

PALAO I.: Ngardok, Melokeiok (April).

In the male the abdomen is a little contracted and the pygidium is more convex than that of the female. In the latter the 5th and 6th sternites are a little longer and there is a terminal tuft of long hairs.

Although certain common forms belonging to the Asiatic mainland, particularly *Oryctes rhinoceros* L. and *Dynastes gideon* L., have spread into many of the Pacific groups and the genera *Papuana, Scapanes* and *Oryctoderus,* the headquarters of which are in New Guinea, extend eastwards as far as the Solomon Islands, the Pacific islands generally have exceedingly few indigenous representatives of the family Dynastidae. Members of the group are numerous in Australia and South America, and the two faunas, so widely separated, include forms very nearly related and even congeneric. In New Zealand is found only a single genus, *Pericoptus,* unrelated to any other in the Southern Hemisphere. In Fiji occurs only the equally isolated *Anomacaulus,* and the present genus is another instance of the same kind. Probably these are the remains of a once numerous company.

MELOLONTHIDAE.

Lepidiota carolinensis n.sp.

Rust-red, the head and pronotum generally rather darker, very shining, the surface bearing extremely minute white setae; moderately elongate and convex. Eyes large, clypeus small, completely rounded, strongly punctured, as well as the forehead. Pronotum minutely and sparsely punctured, the sides bluntly angulate behind the middle, the front angles almost right-angles, the hind angles very obtuse. Elytra strongly and closely punctured, with scarcely visible discoidal costae. Pygidium strongly punctured, not shining. Sternum densely clothed with yellow hair. Abdomen almost smooth. Club of the antenna moderately long.

Length 20—23 mm., breadth 9—11.5 mm.

PALAO I.: Melokeiok, Ngeremlengui (April); PELELIU I. (April).

Many species of this genus have been described from Australia and New Guinea, but few appear to occur farther east. Two are known to me from the Solomon Islands, but none are known in Fiji or Samoa. The present species is, therefore, probably a very isolated one. Like many of the New Guinea forms, it has a very shining upper surface, upon which only scattered and minute scales can be seen. In fact, in *L. carolinensis,* although the punctures which contain them are fairly large and deep, the scales are so small as to be visible only under a high magnification. They may be more exactly called setae, being very narrow though short. Affinity with the Papuan species of *Lepidiota* is indicated also by the claws, which, instead of a stout tooth more or less parallel with the tip found in most Malayan species, have a minute basal tooth directed backwards.

The colour of the insect is a bright rusty-red, the metasternum is clothed with fairly long yellow hairs and the abdomen is very smooth, but with very short, scanty and inconspicuous hairs at the sides.

The two sexes are almost alike, the spurs of the hind tibia are not broad in the female, but the inner one is much shorter than the outer.

British Museum (Natural History),
Cromwell Road, S.W.7.
March 18th, 1939.

Swiss Coleoptera in Early Spring.—In 1935 I had occasion to spend a week at Blonay, in the Department of Vaud, about 1,000 ft. above Lake Geneva, just as the snows were melting, and was interested to note the number of insects which it was possible to collect. A few of these were taken on or under the snow. Those noted in the list below as coming from Les Pleiades were at a height of about 4,000 ft. The others, except the specimen of *Aphodius fossor* L., which occurred on the pavement in Montreux, down by the lake, were all taken in and about Blonay itself. I have recently had occasion to go through the specimens again, and it may be of interest to publish a list of them, for the benefit of collectors who know the same species here in England.

Two points are worth recording. The first is that the specimen of a female *Drilus flavescens* Ol. emerged in the following June from a shell of *Cepaea nemoralis* L. which I had brought back from Blonay, with some other species of snail, and placed in a box in my cabinet. How long the insect had remained as an adult in the snail-shell I cannot say, and the date of its emergence was not noted. Two other shells, brought home from the same spot, proved also to have inhabitants, as specimens of the solitary wasp, *Agenia variegata* L., appeared out of them on the following May 3rd. Possibly the apparent rarity of the females of *D. flavescens* in this country may be in part due to this habit of hiding in snail-shells, where, in spite of their size, they are completely concealed.

The other point is that I had an almost startling five minutes of collecting when, on turning over an old stone, warm in the sun, I found what appeared for the moment to be a living swarm of green jewels. I captured what I could, and the insects proved to belong to no fewer than six species, *Brachinus explodens* Duft., *B. crepitans* L., *Agonum dorsale* Pont., *Ophonus azureus* F., *Chlaenius nigricornis* F. and *Pterostichus coerulescens* L. The first three of of these were in large numbers. Of the others I only saw and captured one of each. But the occurrence made me wonder whether the striking green coloration had any connection with this habit, familiar in some at least of these species, of swarming in such localities. The colour certainly was not developed by Nature simply to adorn our cabinets.

The full list of coleoptera taken was as follows: *Badister bipustulatus* F., Les Pleiades, 2.iv; Blonay, 4 and 5.iv; *Chlaenius nigricornis* F., Blonay, 5.iv; *Ophonus azureus* F., Blonay, 5.iv; *Pterostichus coerulescens* L., Blonay, 5.iv; *P. vulgaris* L., Blonay, 6.iv; *P. strenuus* Pz., Blonay, 6.iv; *Abax ater* Vill., Blonay, 3.iv; *Brachinus explodens* Duft., Blonay, 5.iv; *B. crepitans* L., Blonay, 5.iv; *Cercyon haemorrhoidalis* F., Blonay, 7.iv; *Astilbus canaliculatus* F., Blonay, 4, 5, and 6.iv; *Astenus angustatus* Payk., Blonay, 4.iv; *Paederus litoralis* Gr., Blonay, 5.iv; *Oxytelus rugosus* F., Blonay, 7.iv; *Coprophilus striatulus* F., Les Pleiades, 2.iv; *Stenus rogeri* Kr., Blonay, 7.iv; *S. similis* Hbst., Blonay, 7.iv; *Reichenbachia fossulata* Rchb., Blonay, 7.iv; *Phosphuga atrata* L., Blonay, 3.iv; *Sphaerosoma piliferum* Müll., Blonay, 6.iv; *Anthrenus scrophulariae* L., Blonay, 3.iv; *Aphodius fossor* L., Montreux, 4.iv; *Oxyomus silvestris* Scop., Blonay, 7.iv; *Drilus flavescens* Ol., Blonay, emerged from shell of *C. nemoralis* L. in June; *Longitarsus luridus* Scop., Blonay, 4.iv; *Hermaeophaga mercurialis* F., Blonay, 3.iv; *Anaspis frontalis* L., Les Pleiades, 1.iv; *Otiorrhynchus porcatus* Hbst., Blonay, 3.iv.—L. W. GRENSTED, Oriel College, Oxford: *March 13th*, 1939.

Insects bred from owl-pellets.—The following species of Diptera and parasitic Hymenoptera were bred from owl-pellets sent in July, 1938, from the Denbighshire estate of Major W. M. Congreve and referred to the Hope Department of Entomology by Mr. W. B. Alexander, of the Edward Grey Institute of Field Ornithology. I am indebted to Messrs. J. E. Collin and G. Nixon for the identifications. DIPTERA: *Scatophaga squalida* Mg., 5, em. 14.vii.1938 (Cordyluridae); *Hydrotaea occulta* Mg., 3, em. 14.vii.1938; *Fannia aerea* Ztt., 1, em, 23.vii.1938 (Anthomyiidae). HYMENOPTERA: *Phaenocarpa ruficeps* Nees, 2, em. 20.vii.1938; 5, em. 25.vii.1938; 1, em. 2.viii.1938 (Braconidae).—E. W. AUBROOK, University Museum, Oxford: *March 25th*, 1939.

Rediscovery of Agrilus biguttatus F. (Col., Buprestidae) in Sherwood Forest.—Last November a friend and I were searching for certain Coleoptera in Sherwood Forest, Notts. While we were examining a freshly felled oak, we found a number of apparently fully grown larvae and several dead imagines of the very rare *Agrilus biguttatus* F. The larvae were mostly inside the bark, but a few were between it and the wood; the dead beetles were protruding through holes in the bark. This insect was probably being preyed upon by *Thanasimus formicarius* L., since its reddish coloured larvae were also common in the tree among those of the *Agrilus*. I believe that this is the first occasion this Buprestid has been found here since Donisthorpe discovered it in this locality in July, 1908 (Fowler, W. W., and Donisthorpe, H. St. J. K., 1913, The Coleoptera of the British Islands, Lond., **6**: 273). Prior to this it was known to occur in Darenth Wood, but was said not to have been recorded from there for many years. The only other localities (Hampstead and Cuckfield) given by Fowler (1890, *op. cit.*, **4**: 70) are old records of Stephens.—D. TOZER, 80 Sparkenhoe Street, Leicester: *February 4th*, 1939.

Reviews.

'THE BRITISH CADDIS FLIES (TRICHOPTERA). A COLLECTOR'S HANDBOOK.' By MARTIN E. MOSELY, F.R.E.S., F.Z.S., with an Introduction by N. D. Riley, F.R.E.S., F.Z.S. Illustrated by D. E. Kimmins. Published by George Routledge & Sons, Ltd., 74 Carter Lane, London. Royal 8vo, 320 pp. 1939. Price 21/-.

This is a most instructive book, and brings our knowledge of these most interesting insects up to date. The late Robert McLachlan's celebrated work on the Trichoptera of the European Fauna, published between 1874 and 1884, has long been out of print, and is expensive when it turns up in a second-hand sale, so that this book fills a long-felt want. The plates are excellent and the figures in the text are beautifully clear, making the task of recognising the genital characters easier than usual. There are three plates, and more than six hundred figures, in the text, with full descriptions of the different species. The book will enable the collector to identify easily most of the specimens of these attractive insects which he finds in his neighbourhood. We can strongly recommend its purchase.—R.W.L.

'A BUTTERFLY BOOK FOR THE POCKET. INCLUDING ALL SPECIES TO BE FOUND IN THE BRITISH ISLES WITH LIFE-SIZED COLOURED PLATES AND LIFE HISTORIES.' By E. SANDARS. 6 in. by 4½ in., 332 pp., 63 pls. Published by Humphrey Milford, Oxford University Press, London, 1939. Price 7/6.

The enterprise of both author and publisher in producing yet another work on British butterflies is justified on account of the original method of presentation which has already made the Oxford series of Pocket Handbooks so popular. In this book the reader will find in concise form all the usual information about habitat, haunts, larva, food-plants, pupa, imago, varieties, etc., but in addition he will have the most recent nomenclature, tables of life-histories and of food-plants, distributional maps, generic descriptions with figures of wing-venation, coloured plates on unglazed paper actually facing the descriptions, paragraphs on identification wherever confusion might be possible, comparative drawings of eggs, a bibliography and a glossary index. Yet a further novelty is the deliberate avoidance of treatment of the extinct Large Copper and relegation to the appendix of descriptions of nine occasional immigrants not able to breed in Britain. An unfortunate feature is the lack of authorities for species, although these are given for genera. Several of the illustrations might have been improved by figuring better set specimens and there are a number of omissions in the distributional maps, although these clearly embody the results of much research.—B.M.H.

'A MONOGRAPH OF THE BRITISH NEUROPTERA.' By F. J. KILLINGTON. Vol. 1, pp. xix+269, plates i—xv (1936); Vol. 2, pp. xii+306, plates xvi—xxx (1937). 8vo. Ray Society, London. Price 25/- each.

The ancient, interesting and too-little-known order of Neuroptera has been monographed, as regards British species, by a loving hand. The author, who has since taken his D.Sc. at Oxford, has written an extremely fine and learned work which cannot but enhance the reputation of the Ray Society's productions. The introduction points out that, as now defined, the order is a natural, homogeneous group: seventeen families are recognised, of which five are British. Dr. Killington follows Withycombe's phylogeny, thus utilising five superfamilies, Keys are given for the identification of imagines and larvae of each British family and a list of the fifty-three species is provided. The first four chapters deal with the detailed morphology of imago, egg, larva and pupa, and are illustrated by fifty-four excellent line drawings, almost all original. The living insect is discussed in the next chapter in all its aspects, and especial attention is paid to its parasites, of which Dr. Killington himself has bred seven species for the first time from Neuroptera, and others from species of Neuroptera not previously known to be the hosts. It is noted that parasites have not been obtained from eggs in this country, and that there is little evidence of attacks on pupae. The remainder of Volume 1 and the first 246 pages of Volume 2 give an account of the British species, in which the description, and the life history so far as it is known, of each species are fully treated; original line drawings illustrate special points. The reviewer finds that only in the case of fourteen out of the fifty-three British species is the full life history unknown, and of these some stages are known in six, so that there is complete ignorance only in the case of eight of the British species, all of which are rarities and some only known by a few examples. Noteworthy in this latter category is the peculiar *Psectra diptera* (Burm.). This is an achievement to which Dr. Killington has himself contributed much, and of which he may well be proud. The remainder of Volume 2 is occupied by an appendix on collecting, etc., and there is a fine bibliography occupying thirty-one pages and comprising items by two hundred and twenty-eight authors; finally there is a complete index. The two volumes contain thirty plates, mainly of wings and larvae: while all are good, especial praise is due to those which Dr. Killington has painted with a delicacy and skill that show him to be no mean artist. Others are from photographs by Mr. D. E. Kimmins. The publishers as well as the author are to be congratulated on these attractive additions to the Ray Society's library.—G. D. HALE CARPENTER.

Society.

ENTOMOLOGICAL CLUB.—The Verrall Supper meeting took place at the Holborn Restaurant on January 17th, 1939. The meeting was, as usual, called for the early hour of 6.30 p.m., to enable the Members and their friends to enjoy the conversazione in the large room specially reserved for this purpose. The attendance at the conversazione was 170, and 168 sat down to supper, Mr. Collin occupying the Chair. The Bishop of St. Edmundsbury and Ipswich said grace. After the toast of ' The King ' and the silent toast of ' Mr. Verrall,' the Chairman gave a short account of the aims and objects of the Association, reminding the company of some of the difficulties, financial and otherwise, which as Hon. Secretary of the Verrall Supper Association he had to contend. He also emphasized the necessity for the co-operation of everyone if the success attained by the Association was to be continued, and he reminded the younger generation of their obligation to make a study of the spirit in which the founder intended the Association should be organised as it was obvious that some day it would devolve upon them to carry on the traditions. The high spirits of the meeting were well maintained and everybody appeared to be having a very happy and pleasant evening. Mr. Collin is to be congratulated in again providing a most successful function.—H. WILLOUGHBY ELLIS, *Hon. Secretary.*

NOTES ON BRITISH COLLEMBOLA.

BY RICHARD S. BAGNALL, D.SC.

This is the fourth part of the series and is continued from Ent. Mon. Mag., Vol. LXXV, pp. 21-28, 56-59 (1939). In the third part I omitted to state that *Proisotoma angularis* Ax. was an addition to the British Fauna.

In the following pages a new genus *Isotomiella* is diagnosed for *Isotoma minor* Schäff.; *Hypogastrura (Schäfferia) willemi* Bonet, *H. (H.) packardi* var. *dentata* (Fols.), *Anuridella immsiana* sp.n., *Onychiurus fimetarioides* Den., *Isotomodes britannicus* sp.n., *Isotomiella distinguenda* sp.n., *Isotoma poseidonis* sp.n., *I. sphagneticola* Ax., *Archisotoma megalops* sp.n., *Axelsonia littoralis* (Mon.) Den., *Architomocerura crassicauda* Den., and *Isotomurus alticola* Carl are for the first time recorded as British. Of these *Isotomodes britannicus* almost certainly replaces the *I. productus* of British authors and the genera *Axelsonia* and *Architomocerura* are additions to our fauna. *Anuridella immsiana, Isotoma poseidonis, Archisotoma megalops* and *Axelsonia littoralis* represent further most unexpected additions to our knowledge of the littoral Collembola and they will be fully described and figured in a forthcoming memoir on halophilous and riparian springtails.

In synonymy *Onychiurus helveticus* Denis, 1938, falls as a synonym of *O. laminatipes* Bagnall, 1937, and *O. flavidulus* is proposed for *O. flavescens* Bagn., that name having been used by Kinoshita in 1916.

In Addendum I the new names *Onychiurus stachianus, Anurida denisi* and *Entomobrya womersleyi* are proposed for *O. stachi* Den. (Italy), *A. trioculata* Den. (France) and *E. maritima* Wom. (Australia), those names being preoccupied.

In Addendum II *Axelsonia nitida* Fols. (Japan) is re-instated as a good species and the name *A. australis* is proposed for *littoralis* Wom. (Australia) *nec* Moniez.

I am particularly pleased to associate the name of a species of *Anuridella* with Dr. A. D. Imms, F.R.S., whose monograph on *Anurida maritima* remains a classic to this day.

Hypogastrura (Schäfferia) willemi Bonet.

Octomma longispina Willem, 1902, Ann. Soc. Ent. Belg., XLVI, p. 279; *Hypogastrura (Schäfferia) willemi* Bonet, 1930, Eos, VI, p. 125; Denis, 1934, Bull. Soc. Hist. Nat. Toulouse, LXVI, p. 323; *Schäfferia willemi* Denis, 1937, Bull. Mus. Roy. Hist. Nat. Belg., XIII, No. 20, p. 2.

Originally described from the caves of Han and Rochefort (Belgium), this distinct species has been recorded (and redescribed by Denis from N.E. France and from the cave of Goyet in Belgium.

SCOTLAND: In December, 1934, I found the species (kindly identified by Denis) at S. Queensferry and on Blackford Hill and from February, 1935, onwards, it proved to be one of the commonest of the 'Achouritids' to be found in the Corstorphine Woods where I have seen it on several occasions living gregariously under stones and on one occasion subsisting on the remains of a dead worm. Further specimens were taken at Cramond (Dalmeny Estate), on Arthur's Seat (several, i.35), whilst in April, 1937, I found it on damp ground at Culross (FIFE). In ENGLAND I came across a single example at Gibside (DURHAM) whilst Mr. J. G. Litster sent me an example from IRELAND (Glencraig, Co. Down, 21.vi.37).

The above are surface records that somewhat affect the insect's standing as a cave-species, though, thanks to Litster's indefatigable researches, I am now able to record the species from Chislehurst Caves (KENT) and from an unnamed cave in Cheddar Gorge (SOMERSET).

Hypogastrura (s.str.) *packardi* var. *dentata* (Fols., 1902).

Achorutes lapponica Bagnall MS. in Womersley, 1930, Proc. Roy. Irish Acad., XXXIX, Sect. B., No. 11, p. 164.

This is the *A. lapponicus* of Axelson whose description was published within a month or so after Folsom's publication. It is of the same colour and general form as *socialis*, but falls in the larger section in which the dentes are not furnished with large teeth and in the subsection wherein the foot is guarded by a single long clavate tenant hair.

The type-form is characterised by the stout capitate hairs of the body, but these are only weakly capitate towards the end of the body in the variety which further differs in having the claws of the feet toothed internally. Folsom (1916, p. 484) states that *dentatus* is a seasonal variety of *packardi*, he having bred the latter from the eggs of the former, and that in Massachusetts there are at least three broods which mature at intervals of six or seven weeks. The AH which are at least as long as the hind claw in *armatus* are only 0.75 as long in this species.

The type-form is the Snow-flea, *A. nivicola*, of Packard (*nec* Fitch) and the *Schoturus nivicola* of Lintner.

SCOTLAND: A single example found in sphagnum on the slopes of Cairngorm at over 3,000 feet, vii.08. First and only British record.

Hypogastrura nivicola (Fitch, 1847).

Achorutes socialis Uzel, 1890, Sitzb. k. böhmisch. Ges. Wiss., II, p. 69, pl. II, f. 16-19; *Hypogastrura socialis* Bagnall, 1935, *Vasculum*, XXI, p. 99.

The identity of *socialis* with *nivicola* has now been established beyond doubt by Folsom (*in litt.*) as a result of his examination of Fitch's types. It was recorded as *nivicola* by Axelson (1900, Ent. Tidskr., XXV, p. 67) in a paper on Norwegian Collembola.

Taken on Ben More near Crianlarich as well as from the summit of Cheviot, these are, as yet, the only British records.

Brachystomella parvula (Schäff.).

Davies, 1934, North Western Nat., p. 117 (with synonymy).

Davies was wrong when he claimed to bring this species forward as British for the first time. It is a species of many synonyms and C. H. N. Jackson (1928, Nat. Hist. Wicken Fen, pt. 4, p. 301) records it under the guise of *Chondrachorutes wahlgreni* Den., 1924, pointing out that Shoebotham (1917) had recorded *Chondrachorutes* sp. from Britain, probably this species.

SCOTLAND: On Ben Vorlich, 26.v.12, and from amongst seaweed at the head of Loch Long with *Hypogastrura bengtssoni* Ågr., v.12.

Anuridella immsiana sp.n.

Allied to *submarina* Bagn. Length 0.5—0.65 mm.; white; slender. *PAO in form of rosette with 8—11 well defined unilocular triangulate vesicles* much as in *Anurida maritima* and *A. denisi* m. (*trioculata* Denis). *The intermediate legs, as well as the hind pair*, with the third subcoxa each furnished with a prominent protuberance.

Separated from both *submarina* and *calcarata* Den. by the italicised characters and otherwise much as in *submarina*.

SCOTLAND: Shore of Dalmeny Estate, under stones or lying in loose dryish sand, 31.vii.35. IRELAND: Cloughey, Co. Down, shore, vii.38 (*J. Litster*).

Anurida tullbergi Schött.

This species does not appear to have been met with since I first recorded it in 1907 from the Tyne and Derwent (a tributary of the Tyne). It occurs plentifully on the Thames between Chiswick and Richmond where it is found under stones, and crawling on the muddy shores of the river at low tide.

I hope to have the opportunity of searching for *Anurida crassicornis* Reut. which was described in 1879 from under stones in the River Tay near Perth. It will almost certainly be found to be referable to *tullbergi* and in such case *crassicornis* would replace the name *tullbergi*.

Onychiurus laminatipes Bagn., 1937.

Onychiurus ambulans Handschin (*nec* Auct.), 1920, Verh. Naturf. Ges. Basel, XXXII, p. 23, figs. 45-48 (with var. *inermis*); *Onychiurus laminatipes* Bagnall, 1937, Scot. Nat., p. 148; *Onychiurus helveticus* Denis, 1938, Boll. Soc. Adriatica Sci. Nat. Trieste, XXXVI, p. 115.

Denis has proposed the name *helveticus* for *O. ambulans* of Handschin, but as I had already proposed the name *laminatipes* for the same species, *helveticus* falls as a synonym. I now have several records from the Forth Area, NORTHUMBERLAND and DURHAM. Also from IRELAND (J. Litster).

Onychiurus fimetarioides Denis, 1938.

Boll. Soc. Adriatica Sci. Nat. Trieste, XXXVI, p. 108, for *Onychiurus pseudofimetarius* Handschin (*nec* Folsom), 1920, Verh. Naturf. Ges. Basel, XXXII, p. 25, figs. 50-52.

This species is widely spread with us and although I have not yet made a close study of my *fimetarius* material in 1935, by a curious coincidence I labelled my preparations of this species as '*Onychiurus fimetarioides* n.n. for *pseudofimetarius* Handschin, *nec* Folsom.'

Onychiurus flavidulus n.n.

Onychiurus flavescens Bagnall, 1935, Scot. Nat., p. 115 (*nec* Kinoshita, 1916, Dobuts. Z. Tokyo, XXVIII, p. 458, figs. 34-38—in Japanese).

Onychiurus halophilus Bagn.

I am glad to be able to give other records of this very distinct and very local species, so far only known from Scotland.

NORTHUMBERLAND, Cullercoats, two examples with a number of *O. daviesi* under a rock below high-water mark, 16.ii.39, and ESSEX, Canvey Island, one only with *Polycanthella acuminata*, xii.37. Also from IRELAND (*J. Litster*).

Isotomodes britannicus sp.n.

Length *c.* 1.0 mm. Very elongated; white; integument smooth.

PAO elliptical or feebly reniform, c.0.8 the width of Ant. I; posteriorly protected by 5—7 guard setae. Relative lengths of Ant. I—IV 16 : 24 : 26—28 : 40; IV with several long slender sensory rods. Posterior margin of tergite IV furnished with several strong curved spine-like horn-coloured setae interspersed with others not so strong; V+VI with a pair of long straight antero-median spine-like horn-coloured setae and posteriorly a number of similar setae. Furcula small, extending only to half-way across Abd. III; manubrium without ventral bristles and dentes each furnished with one distally situated ventral bristle. Relative lengths of dentes and mucro 16—18 : 6. Emp. app. simple, those of intermediate and hind feet 0.22 and 0.3 the length of claw respectively.

This species is widely distributed; records from PERTHSHIRE, Clyde and Forth areas, NORTHUMBERLAND, DURHAM, YORKSHIRE, LANCASHIRE, ESSEX, CAMBRIDGESHIRE, London area, KENT, SURREY, SUSSEX and DEVON. IRELAND (*Litster*).

This is, no doubt, the *Isotomodes productus* of Shoebotham (1911, Ann. Mag. Nat. Hist. (8), VIII, p. 34) and Womersley (1930, Ent. Mon. Mag., LXVI, p. 38) and is the species I recorded (mentioned in text as being found with other species) from Lancashire in 1916 (Lancs & Cheshire Nat., 1916, p. 110).

I. britannicus agrees with *productus* Ax. and *denisi* Fols. (Hawaii) in having the ventral surface of the manubrium naked (in the American species, *tenuis* Fols., it is furnished with two pairs of setae), but differs from *productus* in that the dentes are only 2.66 to 3.0 times the length of the mucro as compared with 4.0 times the length in *productus*. It agrees with both *tenuis* and *denisi* in that the PAO is protected by a posterior series of guard setae only, whereas in *productus* there is an anterior series also. It agrees with *productus* in having a number of sense-rods on Ant. IV, but in *britannicus* they are comparatively longer and more slender. The integument of the British species is smooth and not coarsely granulate, as described for *productus*.

Isotomiella gen. n.

Near *Isotoma*. *PAO and ommatidia absent. Ant. IV with* 6 (5—8) *comparatively large sub-apical, sensory cones* situated latero-ventrally in addition to sensory rods of usual type. *Manubrium ventrally naked except for two series of subdistal setae*, dentes slender and mucro minute, bi- or tridentate. Longer body setae fringed. *Genital and anal segments ankylosed.*

GENOTYPE: *Isotoma minor* Schäffer.

The characters italicised above make it impossible to retain this species in the genus *Isotoma*. There are possibly several species and the number and disposition of the ventral setae or bristles of the manubrium may be a useful aid to their discrimination. Scherbakov's *Isotoma finitima* is apparently referable to this genus; it has eye-spots, but no ommatidia or corneae, and I include it in the following table. The sensory cones of Ant. IV and the chaetotaxy of the manubrium are not described for either *finitima* or *muscorum*.

TABLE OF SPECIES.

1. Dentes 2.0 times (or more) the length of the manubrium; mucro tridentate .... 2.

—. Dentes 1.33 times the length of the manubrium; mucro bidentate (Germany) .... *I. muscorum* (Schäff.).

2. Dentes 2.0 times as long as the manubrium. Colour bluish-white with pigmented eye-spots (though without ommatidia) (Russia, E. Greenland) .... *I. finitima* (Scherb.).

—. Dentes 2.5—3.0 times as long as the manubrium. Colour white, without pigmented eye-spots .... 3.

3. Length 0.8 mm.—1.0 mm. Antennal joints more elongate, subdistal. Setae of ventral surface of manubrium arranged in two series of 1+2 (3)+2; longer and stronger. Outstanding body setae relatively longer and more curving, doubly fringed .... *I. minor* Schäff.

—. Length 0.55—0.6 mm. Antennal joints broader, IV sub-ovate. Sub-distal setae of ventral surface of manubrium arranged in two series of 1+1+2; shorter and less strong. Body vestiture weaker; outstanding setae shorter, straighter and fringed on one side only .... *I. distinguenda* sp.n.

Isotomiella minor (Schaeff.).

Frequent, but never in numbers. I have taken it wherever I have collected and have had it sent to me from many localities in Northern IRELAND (*Litster*) and ROUMANIA (*Manolache*).

Isotomiella distinguenda sp.n.

Length 0.55—0.6 mm. White.

A shorter and less slender species than *I. minor;* readily separated by the characters given in the table. Ant. IV is strongly ovate in form and is scarcely twice as long as broad compared with three or more times as long as broad in minor. Seven or eight large subapical sensory cones. The manubrial setae are composed of four on each side as to 1+1+2; the second pair is much more widely separated than the first pair and approximately as widely separated as the outer of the two distal pairs. The dentes are slender and more than 2.5 times as long as the manubrium; mucro small, tridentate. Foot as figured for *I. muscorum* (Börn.).

IRELAND: Belfast Castle grounds, Belfast, 28.iii.37, and Newcross, Co. Wexford, 5.x.37 (*J. Litster*). SCOTLAND: Skelmorlie, shore at high-water mark, vi.35 (*A. C. Stephen*). Only a single example in each case.

Isotoma poseidonis sp.n.

Length 2.2—2.5 mm. Colour uniform grey in the field — grey to blue-grey more or less mottled with darker grey; antenna darker; legs pale, the last two joints with a more or less broad and distinct darker band; manubrium usually pigmented, but dentes pale.

Antennae long, slender, at least 2.0 times as long as the head; sensory organ of Ant. III with two straight rods situated diagonally and each apparently subtending from a slightly raised chitinous ring; IV with low terminal lobe, but without sensory rods. Relative lengths of joints approximately 9 : 14.5 : 17 : 20—IV approximately five times as long as broad.

Ommatidia on dark patch, A—F large, apparently in sub-contiguous pairs —G.H. either vestigial or absent—I have been unable to distinguish them (G & H) and the species probably has only six ommatidia as in its close relative *I. pritchardi* Wom. (Australasian). PAO broadly elliptical, up to 2.0 times as long as broad. Abd. III—IV approximately sub-equal; clothing of short setae as in *maritima*. Foot strongly resembling that of *Axelsonia;* claw without internal tooth, but with a pair of strongly produced lateral teeth situated at about the distal 0.4, thus giving the appearance of the characteristic lateral processes of the foot of *Axelsonia*. Emp. app. with a pair of inner strongly arcuate lamellae as in *Ballistura*.

Dentes approximately twice the length of the manubrium; manubrium strongly setose; mucro tridentate as in *maritima* and *pritchardi*—dentes with a strong, long subdistal bristle. Tenaculum with four teeth, corpus with a few bristles.

The species is much larger than either *maritima* or *pritchardi*; from the former it also differs in its larger (? and fewer) ommatidia, longer antennae, internally untoothed claw, the curiously placed strong lateral teeth and the pair of inner lamellae of the emp. app. It comes nearer to *pritchardi,* from which it differs in its larger size, relative lengths of the antennal joints, strongly developed and more distally situated lateral teeth of claw and the pair of inner lamellae of the empodial appendage.

SCOTLAND: Dalmeny beach and shore between Cramond and Granton, 21.i.37 and iii.37 onwards. It should be noted that Evans comments on the large form of *I. maritima* from Dalmeny beach, 2¼—2½ mm. as compared with 1½—1¾ mm. of examples found on the Fife coast at Aberdown. ENGLAND: NORTHUMBERLAND, Cullercoats, several under rocks below high-water mark, 16.ii.39; Alnmouth, under driftwood, 1 only, ii.39; ESSEX, Canvey Island, odd examples, xii.37—viii.38, in two cases well below high-water mark with *Axelsonia*; and Benfleet, 1 only, vi.37; KENT, Allhallows shore, 1 only, vi.38.

Isotoma sphagneticola Axels., *I bipunctata* Axels. and *I. tenuicornis* Axels.

Bagnall MS. in Womersley, 1930, l.c.

These three species are typical of the sphagnum fauna of our mountains and were first found by me in this country at about 3,000 feet on Ben More, near Crianlarich, ix.25, where they were accompanied by a minute undescribed species of the same genus. All but *tenuicornis* were very plentiful.

They are characterised in Womersley's table and both *tenuicornis* and *bipunctata* are recorded by him from Ireland (p. 181). *I. bipunctata* has more recently been recorded from N. Wales by Davies and is amongst the species I have recently collected from the Dalmeny Estate, where it occurs in ground moss close to the beach.

Archisotoma besselsi (Pack.).

This active little species is perhaps the most widely distributed of our true halophiles and is often to be seen in countless thousands disporting on the muddy silt of our estuaries and shore at low tide. I find that the species rarely exceeds 1.7 mm. in length and that the sexes are strongly dimorphic both in coloration and structure. In life the female is a pale greenish colour, whilst the male is much darker, and under a low power lens has the appearance of being almost black.

The male has the apex of the body more strongly produced, whilst the antennae are very long (twice as long as the head) and curved outwardly; the second segment is usually outwardly curved and the outer margin in the first two-thirds distinctly emarginate. The segments are sub-cylindrical in form and II and III are furnished with two or three prominent outstanding setae at the distal fourth; II-IV are subequal in length, the relative lengths being approximately 7.5 : 11 : 11 : 11.

The claw of this species is exceptionally narrow and without internal tooth; the claw figured by Axelson (1905, *Festschr. f. Palmen,* No. 15, pl. 1, fig. 14, and 1912, Monograph, pl. 10, f. 2) and by Handschin in his *Tierwelt Deutschlands* volume is referable to *Archistoma megalops* m.

An examination of the mouth-parts is instructive. Not only does the structure of the head of the maxilla depart from the typical Isotomid form, but it is found to be markedly different in *besselsi* when compared with *brucei* (Carp.) and *megalops* m. The strongly chitinised dorsal lobe or galea terminates in two teeth in *besselsi* and *megalops* (three in *brucei*); in *besselsi*, externally, there is an elongated, slightly curved and tapering delicate lamella projecting beyond the apex of the galea; internally there is a similar but broader and straight tapering lamella of about the same length in addition to a seemingly stronger, short, broad, leaf-shaped lamella, *none of them being fringed or ciliate.* In both *brucei* and *megalops* all the lamellae are delicate, long and fringed, so that this structure in *besselsi* differs not only in the non-ciliate lamellae, but also in the broad, leaf-shaped form of one of them.

Archisotoma megalops sp.n.

Length 2.0 to 2.3 mm. Colour brown with dark-grey to greyish black markings.

Antennae about 1.25 times the medium length of head; relative lengths of joints 4.5 : 8 : 9 : 11.

Ant. III with a pair of strong curved sensory rods, subtending from a chitinous fold; IV with several curved sensory rods, terminal lobe and sub-apical papilla. Ommatidia apparently six, unusually large, A—D contiguous or sub-contiguous; E—F forming a contiguous pair, well separated from A—D. PAO very narrow, 0.65—0.7 as long as width of Ant. I. Claw comparatively broad, with internal tooth; emp. app. much as in *besselsi*. Furca much as in *besselsi*, but dentes with substantially longer and stronger bristles. Head of maxilla with galea as in *besselsi*, but with very different lamellae; these are delicate structures and there appears to be a larger and longer external (or median) lamella which extends well beyond the apex of the galea and is very strongly ciliate, and two lateral (internal) smaller, but elongated, lamellae also strongly fringed.

ESSEX, Canvey, Canvey Island, a colony under rocks lying in and on a rough gritty sand (chiefly composed of broken cockle shells) at high-water mark, xi.37.

Axelsonia Börner.

1906, Mitt. Nat. Mus. Hamburg, XXIII, p. 159, and 1907, in Voeltzkow's Reise in Ostafrika, Madagaskar u. Südamerika, Wissenschergebnisse, II, p. 147, figs. 1-7; *Moniezina* Denis, 1922, Bull. Soc. Zool. Fr., XLVII, p. 114, figs.; *Axelsonia* Denis, 1924, Bull. Soc. Ent. Fr., 1923, p. 57.

Near *Isotomurus*. Ommatidia 8 on each side, G and H small; *PAO absent;* empodial appendage and furca present; *claws with two lancet-like postero-lateral processes. Ant. organ III composed of or supported by a number of minute and blunt sensory setae or rods.* Abd. II—IV each furnished with two pairs of simple *bothriotricha*. Mucro as in *Isotomurus*, 4—5 denticulate.

GENOTYPE: *Axelsonia thalassophila* Börn.

The absence of PAO and the slender claw-processes and simple abdominal bothriotricha serve to make this a most distinctive genus.

Axelsonia littoralis (Mon.).

Isotoma littoralis Moniez, 1890, Rev. Biol. Nord. Fr., III, 2, p. 69; *Moniezina littoralis* Denis, 1922, Bull. Soc. Zool. Fr., XLVII, p. 114, figs. *Axelsonia littoralis* Denis, 1924, Bull. Ent. Soc. Fr., 1923, p. 57; Arch. Zool. Exp. et Gen., LXII, p. 260, f. III; 1925, Bull. Soc. Ent. Fr., 1925, p. 145; 1938, Boll. Soc. Adriatica Sci. Nat. Trieste, XXXVI, p. 128.

Length *c.* 2.0 mm. Colour dark greyish-black. Form stout, relatively short and broadest at Abd. III-IV.

Antennae longer than head diagonal (57 : 36), the relative lengths of joints 3 : 8 : 8 : 9—IV without apical organ. Organ of Ant. III distinctive, consisting of two sense-clubs subtending from a cuticular fold and supported by c.15 short, blunt sense-rods—the more distal (i.e., c.9) stronger than the posterior series of six. Furca long, relative lengths of manubrium dentes and mucro 20 : 35 : 4; mucro with five teeth. Abd. III and IV subequal. Ommatidia A—F large, in contiguous or sub-contiguous pairs; G and H small.

The species was originally found by Moniez on the Boulonnais coast (France) and since rediscovered and redescribed by Denis from the Ile d'Yen and Banyul-sur-Mer. More recently (1938) recorded from the Italian littoral.

Essex, Canvey Island, under stones well below high-water mark and usually lying on a black tenacious mud, xi-xii.1937 and vi-viii.38. Kent, at Allhallows, vi.38.

Architomocerura Denis, 1931.

Ommatidia 6+6. PAO minute, obscure. Ant. III and IV annulate. Empodial appendage and furca present. Abd. III and IV furnished with bothriotricha.

Genotype: *A .crassicauda* Denis, 1931.

Architomocerura crassicauda Denis.

1931, Mitt. Nat. Hist. Mus. Hamburg, XLIV, p. 219, figs. 6-12; Mills, 1932, Iowa State Coll., J. Sci., VI, 3, p. 265, figs. 9-12.

A small pallid species with dark eye-spots, short furca and longish antennae, the joints 3 and 4 of which are 'ringed' and violet to purplish in colour. It has characters reminiscent of *Archisotoma* (tenaculum and bothriotricha), *Proisotoma* (*Ballistura*) *schötti* (furca), *Entomobrya* and *Tomocerus* (antenna). Behind the second abdominal segment the body is furnished with a variety of types of 'hairs' including some long setulose bristles, and Abd. III and IV are each furnished with a pair of bothriotricha.

On June 1st, 1935, I found a single example of this anomalous and archaic form under a log lying on a tidal flat in the Dalmeny Estate, but up to now I have not succeeded in securing further examples; from the Continental and American records, however, it is probably a woodland species and not, as I had thought, a littoral form. Previously known from Germany and the U.S.A.

Scotland: Forth area as above.

Isotomurus alticola Carl.

Isotoma alticola Carl, 1899, Rev. Suisse Zool., VI, p. 313, pl. 8, ff. 37-39; Bagnall MS. in Womersley, 1930, l.c., p. 183.

This alpine species is included in my MS. list, but my notes concerning it are not at the moment available. It is at once separated from *palustris* Müll. by the characteristic toothed claw and by the form of the mucro. I hope, at no distant date, to have the opportunity of systematically collecting the Collembola of our higher mountains.

NORTHUMBERLAND, near summit of Cheviot with *Orchesella alticola* in 1912, one only. Only British record.

ADDENDUM I.

Onychiurus stachianus n.n.

Onychiurus stachi Denis, 1938, Boll. Soc. Adriatica Sci. Nat. Trieste, XXXVI, p. 106 (*nec* Bagnall, 1935, Vasculum, XXI, p. 102, and 1937, Scot. Nat., pp. 88 and 89).

Anurida denisi n.n.

Anurida trioculata Denis, 1922, Bull. Soc. Zool. Fr., XLVII, pp. 108-116 (*nec* Kinoshita, 1916, Dobuts Z. Tokyo, XXVIII, p. 457, figs. (in Japanese)).

The two species *A. denisi* m. and *A. trioculata* Kinoshita agree in having *three* ommatidia on each side of the head, whereas in the other three known dark species, *maritima, tullbergi* and *amorita*, they number 5 + 5.

In *denisi*, which is only 2.0 mm. in length, the PAO is in the form of a small rosette (as in *maritima*), but with about fifteen tubercles (which according to the figure given by Denis are not contiguous), whilst the ommatidia are situated as to one adjacent to the PAO and two (separated by roughly the diameter of one of them) set diagonally some distance behind the anterior one. In the Japanese species the PAO is elliptical (as in *tullbergi*) and has two well-separated anterior ommatidia situated behind the PAO and a posterior one set at some distance behind.

A. denisi is known from the Ile d'Yeu and occurs on rocks covered with *Fucus* in the same zone as *A. maritima*. Unlike *maritima*, however, it does not appear to leave the rocks at low tide. It should occur with us.

Entomobrya womersleyi n.n.

Entomobrya maritima Womersley, 1934, Tr. Roy. Soc. S. Australia, LVIII, p. 112, figs. (*nec* Reuter in Schött, 1893, K. Svenska Vet.-Akad. Handl., XXV, p. 51).

An interesting halophile described from the coast of S. Australia.

ADDENDUM II.

Axelsonia Börner.

In bringing forward the interesting halophile *A. littoralis* (Mon.), I have purposely omitted to include references to *A. thalassophilus* Börn. in the synonymy. If not identical, it comes very close to *littoralis* and is known from a coral reef east of Madagascar (*Börner*) and the coral island of Aldabra (*Carpenter*).

Womersley reduces *A. nitida* Fols. (Japan) as a synonym of *littoralis*, but a perusal of Folsom's description shows that it cannot be so regarded; the disposition of the ommatidia in two groups and the very long dentes, which are *four times as long as the manubrium,* make it abundantly distinct.

Womersley further records *A. littoralis* from the Australian coast. In its coloration, the smaller, well-separated ommatidia and its long manubrium (the relative lengths of manubrium and dentes being approximately 10: 14) it would seem to be yet another species, for which I propose the name **Axelsonia australis** n.n.

CORRIGENDA.

Folsomia manolachei n.em. for *Folsomia manobechei* Bagnall, 1939, Ent. Mon. Mag., lxxv, p. 58 and *monobechei* l.c. p. 22. I regret the *lapsus calami* in publishing the above name and further tender my apologies to Mons. Manolache for the mis-spelling of his name on pp. 58 and 59.

3 St. Helen's Terrace,
Low Fell, Co. Durham.
February 28th, 1939.

THE AQUATIC COLEOPTERA OF THE ENVIRONS OF PANNAL ASH, NEAR HARROGATE. PART II.

BY RAYMOND R. U. KAUFMAN.

Since preparing the notes for Part I of these papers (1938, Ent. Mon. Mag., lxxxiv, 245-9) the following additional Hydradephaga have been taken and identified:—

Family DYTISCIDAE.

Deronectes assimilis Payk.—Rare. One specimen only from a small pool at Birk Crag (viii).

[*Oreodytes*] *Deronectes rivalis* Gyll.—An uncommon species, a short series of which was taken from the River Crimple in the deeper parts near the banks (vi).

Graptodytes lepidus Oliv.—Not uncommon in small swampy ponds, series having occurred at Birk Crag (vi, viii, x). Rarer in Pannal Ash itself (ix).

Hydroporus dorsalis Fabr.—Rare. One example from the quarry pool at Birk Crag (viii).

H. memnonius Nicol.—Very occasionally taken in cattle pools (vi) (x: *W. M. Hird*).

H. planus Fabr.—Common in swampy ponds (iv, vi, xi) (ii: *A. K. Charlton;* iii: *B. D. Owen, P. Ariell-Wright*). Lundhouse (iv). Birk Crag (vi, viii).

H. tessellatus Drap.—Quite common in the smaller ponds during June (*P. Ariell-Wright*), when long series were taken.

Agabus sturmii Gyll.—Taken both from ponds and slowly running waters, but uncommon (iv). Clark Beck (vi, vii) (xi: *A. R. Huntington*).

Ilybius ater De Geer.—Distinctly rare, one example having been taken in Pannal Ash for the first time from a cattle pond last September.

The aquatic Palpicornia and the family *Dryopidae* are very poorly represented in the Pannal Ash fauna, and despite quite intensive collecting during the last seven years, only thirteen species in all have been noticed, which represents approximately 17 per cent. of the total Yorkshire fauna — an extremely modest figure. The species noticed are:—

Family HYDROPHILIDAE.

Hydrobius fuscipes Linn.—Fairly common in stagnant pools, and occasionally occurring in spring-water wells (iv, vi) (iii: *P. Ariell-Wright*).

Anacaena globulus Payk.—Not uncommon in stagnant ponds, where there was plenty of vegetation, and more rarely from the clearer water of slow streams (iv, v, vi, viii, ix). Clark Beck (ix).

Laccobius alutaceus Thoms.—Very rare. One specimen from a cattle pond in June.

Limnebius truncatellus Thunb.—A rare species, of which only two examples have been taken from a swampy pool (ix, x).

Megalelophorus aquaticus Linn.—A common species which is often on the wing as well on sunny days early in the year (iii, iv) (ix: *P. Ariell-Wright*). Pannal (iv).

Helophorus aeneipennis Thom.—Fairly common—perhaps more so on the wing than from ponds (ii: in a leaf drift at the bottom of the swimming pool; v, ix). Pannal (viii).

H. minutus Fabr.—Series occurred in Clark Beck (vii, viii). Birk Crag (vi). It is also quite commonly in flight on fine days in the spring.

Atractelophorus arvernicus Muls.—Very rare. One example from the River Crimple (vi).

Ochthebius exsculptus Germ.—Most uncommon. The stones in the bed of the River Crimple were diligently searched for this water beetle, but only a few examples occurred in June.

Hydraena gracilis Germ.—Not uncommon under stones in the river bed and more infrequently crawling on the sand just below the surface at the water's edge. Quite long series were taken from the River Crimple in June.

Family DRYOPIDAE.

Lathelmis volckmari Panz.—Rare. A few specimens from under stones lying in the River Crimple (vi).

Limnius tuberculatus Müll.—Not uncommon, and generally in groups of two or three on the underside of stones in the River Crimple (vi).

Dryops ernesti Des Goz.—At the water's edge under stones covering wet earth. A rather uncommon species (iv, v, vi).

Goathland Moor School,
Goathland, Yorks.
March 22nd, 1939.

NOTES ON SYRPHIDAE (DIPTERA). III.

BY J. E. COLLIN, F.R.E.S., ETC.

THE GENUS BRACHYOPA Mg.

Brachyopa bicolor Fln., as at present distinguished from other Continental species, has been considered to be the only representative of the genus found in this country, and there has never been much doubt about its identity. It was, therefore, somewhat disturbing to find that there appeared to be two distinct forms among British specimens, one with practically bare arista and one with that organ pubescent. An arrangement of the specimens under these two forms still left one dissatisfied because other small differences did not fit, and it was not until the discovery of the importance of the shape and size of the sensory pit present in both sexes on the third antennal segment that order appeared, and the presence of four distinct British species was revealed.

The genus *Brachyopa* has been limited by some taxonomists to those species with bare or slightly pubescent arista, those with a long-haired arista, such as *B. conica* Pnz. and *B. testacea* Fln., being placed in the genus *Hammerschmidtia,* but this is certainly incorrect; these two species agree with *Brachyopa* in the very pointed subapical or first posterior wing-cell, while the long hairs on arista are only exaggerated pubescence, present on all sides, and not confined to upper and under sides only as in *Hammerschmidtia ferruginea* Fln. For the purpose of this paper these two, which are not British, are excluded; and a further elimination of the non-British *B. dorsata* Ztt. with its distinctly yellowish sides (more than humeri and postalar calli) to disc of thorax, and *B. arcuata* Pnz. with its clouded middle cross-vein and small dark patch at end of 'vena spuria' above the outer end of discal cell, leaves five Continental species known to the author, four of them being British. All these species have thorax dusted greyish or slate-grey with indications of four darker stripes, yellowish abdomen with a tendency to internal discoloration (especially in some species) and yellow legs with darker tarsi, while there is a sexual difference in the dusting of the face, which covers the whole face in the male and leaves the lower half bare in the female. These species may be tabulated as follows :—

1 (4) Arista practically bare (figs. 1 and 2).

2 (3) Third antennal segment with no sensory 'pit' on inner side (fig. 1); hairs on notopleural area of thorax mainly pale; face less produced. .... *B. insensilis* sp.n.

3 (2) Third antennal segment with a small round sensory 'pit' on inner side below near base (fig. 2); hairs on notopleural area of thorax all dark; face more produced .... *B. bicolor* Fln.

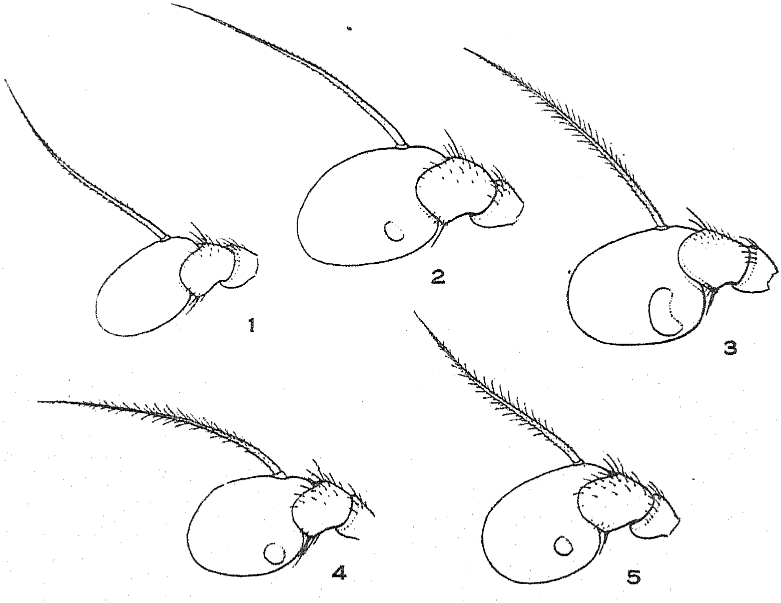
4 (1) Arista pubescent (figs. 3, 4 and 5).

5 (6) A large kidney-shaped sensory 'pit' on third antennal segment (fig. 3) .... *B. scutellaris* Dsv.

6 (5) A smaller, more rounded sensory 'pit' on third antennal segment.

7 (8) Dark hairs on apical half of sidemargins of second abdominal tergite; sensory 'pit' larger and nearer lower side of third antennal segment (fig. 4). (Not British) .... *B. plena* sp.n.

8 (7) Hairs on sidemargin of second abdominal tergite all pale; sensory 'pit' smaller and not so near lower side of third antennal segment (fig. 5) .... *B. pilosa* sp.n.



Antennae of *Brachyopa* spp.: 1, *B. insensilis* sp.n.; 2, *B. bicolor* Fln.; 3, *B. scutellaris* Dsv.; 4, *B. plena* sp.n.; 5, *B. pilosa* sp.n.

These species all differ in the structure of the male genitalia, especially in the processes at the end of the genital (ninth) sternite which encloses the penis, but it is difficult to obtain uniform mounts of these processes from which to make drawings without abundant material, and this is not at present available.

B. insensilis sp.n. ♂ ♀.

♂. Frons dusted greyish except very narrowly in front above antennae. Face in profile short, very concave, epistoma not much produced. Antennae comparatively small, longer than wide (fig. 1), arista yellow. Humeri the same colour and dusted greyish as rest of thoracic disc, postalar calli tawny; scutellum tawny-yellow, dusted only on extreme basal margin and without a transverse depression before tip. Pleurae with very little tendency to yellow ground colour except on prosternum and hindmargin (between hind coxae and spiracle). Pubescence on disc mainly short and dark, but with a considerable mixture of pale hairs, especially on sides and hindmargin. Abdomen with great tendency to internal discoloration. Pubescence on sidemargins all pale. Legs with comparatively slender hind femora. Pubescence mainly pale except for the black spines beneath hind femora. Wings long and narrow; 'vena spuria' not very distinct; an appendix usually present at bend in subapical crossvein.

♀. Resembling male, but eyes separated on frons at ocelli by about two-fifths width of one eye, slightly wider in front; frons, as usual in genus, dusted greyish except in front above antennae, where it is yellow and shining.

Length about 6 mm.

This species was once taken freely by the late Mr. F. Jenkinson on wounds in elm trees at Cambridge, and I possess two females caught in my garden at Newmarket and a male taken at Barton Mills (Suffolk). Mr. C. J. Wainwright has a male caught at Upper Arley (Worcestershire). There were specimens in Bigot's collection without history.

B. bicolor Fln.

♂. Frons extensively shining yellowish, dusted only on upper angle and very narrowly along eye-margin. Face longer and epistoma rather more produced than in *insensilis*. Antennae larger (fig. 2), arista brown. Humeri, postalar calli and basal half of scutellum the same colour as rest of thoracic disc, end of scutellum tawny-yellow and more shining. In immature specimens postalar calli may be indistinctly tawny and yellow colour of scutellum may spread towards base, but basal half is still dusted, not shining. There is also a more or less distinct transverse depression across scutellum. Pleurae, except prosternum, grey. Pubescence on disc rather dense and all dark, except on extreme front margin. Abdomen with some dark hairs on disc and about side-margin of second tergite. Legs strong, hind femora especially stouter than in other species, and conspicuously spinose beneath; middle femora also with a few small spines on each side towards tip beneath. Fine pubescence on all legs mainly pale. Wings with 'vena spuria' more distinct, and a more even curve to subapical crossvein than in *insensilis*; seldom any indication of an appendix at bend in subapical crossvein.

♀. Resembling male except for its wide frons, and (as usual) less extensively spinose hind femora, but there are no dark hairs at sides of second abdominal tergite.

Length about 7 mm.

The restricted use of Fallen's name for this species appears to be warranted by his description of '*apex scutelli . . . testacea*' (his *var.* β having '*scutello toto testaceo*'). Also his specimens were taken '*in succo distillante Quercus,*' and to my knowledge the above species and *scutellaris* (answering to Fallen's species and *var.*) occur in such situations.

B. bicolor is not, in my experience, anything like so common as *B. scutellaris*. I possess two old English males from 'Dossiter's Collection,' a male bred from, and two females taken on, a *Cossus*-infested oak in the New Forest, and a female also taken in the New Forest (Hants) by F. C. Adams. There are other specimens from the New Forest in the British Museum Collection, and Mr. C. J. Wainwright took it in company with *B. scutellaris* on a *Cossus*-infested oak in Denny Wood (New Forest) in June, 1938. There were a pair in Kowarz's collection from Bohemia and a male without history in Bigot's collection.

B. scutellaris Dsv.

♂. Frons yellow, faintly dusted on upper half. Face short and concave, epistoma not much produced, but appearing more so when clypeus is not retracted. Humeri, postalar calli and scutellum yellowish, the first usually dusted so as partially to hide ground colour in male, the last rather large and with no distinct transverse depression. Thorax viewed from behind with the sutures proceeding from notopleural area darkened, the darkened end of each suture partially interrupting the longitudinal grey stripe between the darker median and side stripes. This is not so in the next two species. Pleurae of yellowish ground colour with extensive greyish patches, especially sterno- and hypo-pleura mainly grey. Pubescence on disc short and dark, but with numerous pale hairs round margin especially on notopleural area. All hairs on scutellum dark. Abdomen with some dark hairs on hindmargin and at sides of second tergite, and on disc of third and fourth tergites. Legs with pubescence towards end of all femora, and on all tibiae and tarsi mainly dark. Wings with 'vena spuria' faint about base, more distinct towards tip.

♀. Resembling male. Dusted part of frons very pale grey with indications of yellow ground colour showing through. Epistoma slightly more produced than in male. Humeri more distinctly yellowish.

Length about 6.25 mm.

Desvoidy knew the female only, and his description of '*humeris scutelloque testaceis*' and arista '*subvillosa*' appears to justify the use of his name for this species, which is easily recognised by the large reniform sense-organ on the third antennal segment (fig. 3), and is the most common and widely distributed of the British species.

I have records from Cambs, Suffolk, Sussex, Surrey, Hants, Kent, Devon, Hereford, Gloucester, Worcester, Oxford, Berks, Lancs and Glamorgan. There were specimens without history in Bigot's collection.

B. pilosa sp.n. ♂.

♂. Frons dusted only on upper angle as in *bicolor*. Third antennal segment small, the small rounded sensory 'pit' well above lower margin of segment (fig. 4). Humeri seen from above dusted greyish like front of thorax, but translucently yellowish on lower side, postalar calli indistinctly tawny, scutellum all tawny-yellow without transverse depression. Pubescence on disc rather longer than usual, dark, with a mixture of pale hairs round margin and especially round margin of scutellum, which has no transverse depression. Pleurae with yellow ground colour showing in patches as in *scutellaris*. Abdomen with a few short dark hairs on disc of second to fourth tergites, but hairs at sides of second tergite all pale. Pubescence on femora mainly dark.

Length about 7 mm.

This species is readily distinguished from *scutellaris* by the antennal sensory organs and many other characters but closely resembles the next species.

B. pilosa is at present known only from four males taken at Lyndhurst (Hants) by Col. Yerbury early in May in 1894, '96, '97, one in my collection and three in the British Museum. There is a male in Kowarz's collection from Bohemia.

B. plena sp.n. ♂.

♂. Differing from *pilosa* in having frons more extensively dusted, antennal sense-organ larger and very close to lower margin of segment (fig. 5). Normal (shorter) pubescence on thorax. Scutellum with a slight transverse depression. Numerous black hairs on apical half of second abdominal tergite at sides.

Length about 7 mm.

Described from two males in Kowarz's collection from 'Waldegg,' Bohemia.

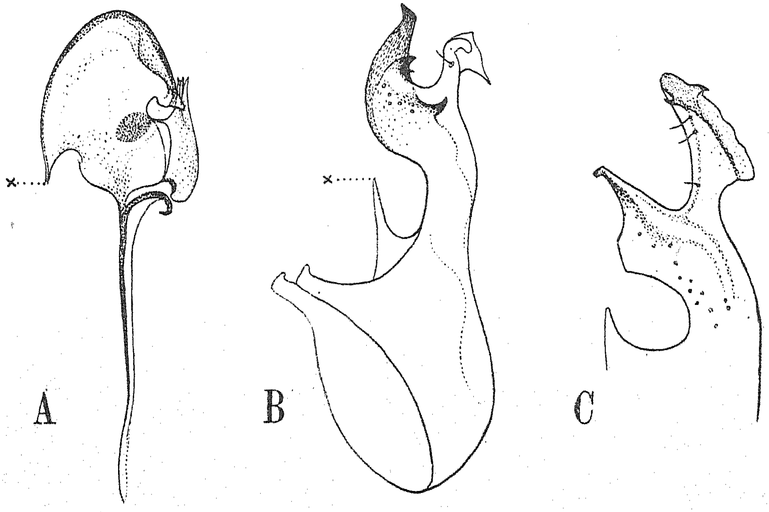
A NEW SPECIES OF XYLOTA.

In 1935 my friend Mr. Colbran J. Wainwright called my attention to a peculiar variety of *X. sylvarum* L. taken by him in Bagley Wood, near Oxford, on July 21st of that year. This I found agreed (except in having no small orange spots on second abdominal tergite) with the two odd males mentioned by Mr. Verrall in British Flies, Vol. VIII, p. 604, one (presumably British) labelled 'bought of Saunders, 12/1879,' the other in Kowarz's collection labelled 'Marbd. 21.7.69,' and that I possessed another male from Dr. Capron's collection probably taken in the Guildford district of Surrey. It seemed certain that they represented something more than a variety of *sylvarum*, and an examination of the genitalia confirmed my suspicions. I have now seen two additional specimens, both males, taken by Mr. Allen M. Lowe in the Isle of Wight in the second week of August, 1935, when they were 'hovering in a small cloud round the lower branches of an oak.' The following description should enable anyone to recognise the species.

Xylota xanthocnema sp.n. ♂.

Closely resembling *X. sylvarum* L., but with entirely yellow tibiae and yellow ground colour beneath the golden haired side spots on third abdominal tergite. Easily mistaken for a rather small *X. sylvarum*. Thoracic pubescence shorter and more recumbent (more like that of female *sylvarum*). The yellow ground colour of spots on third abdominal tergite best seen when viewed from behind, and from this point of view the second tergite will be found to have a much narrower median dark line separating the steel-coloured side patches than in *sylvarum*, and occasionally there may be a pair of small yellowish spots on this tergite. Hind trochanters with smaller blunt spurs, the more basal one of the two especially inconspicuous; all femora rather shorter haired than, and tibiae without the dark markings of, *sylvarum*. Genitalia not unlike those of *sylvarum* except for marked differences in lateral processes at end of genital (ninth) sternite, this sternite being modified (as in most Syrphidae) into a somewhat tubular shape to enclose the penis.

Length 11—12 mm.



In above figures 'A' is the penis and 'B' the ninth (genital) sternite with one of the lateral terminal processes of *X. xanthocnema*, 'X' being the point of attachment of the penis. 'C' is the corresponding lateral process of *X. sylvarum* drawn to the same scale. These processes, one on each side of the penis, are not always symmetrical; that on one side may vary in details from that on the other side, but the general plan in each species is as shown in the figures. The penis is figured as seen in profile, and viewed thus is very similar in the two species, but when viewed from in front there is a constriction at a little more than one-third from top, and the part above this constriction is wider in *xanthocnema* and not so cone-like as in *sylvarum*.

Raylands, Newmarket.
March 19th, 1939.

FOUR NEW GENERA OF BRITISH SAWFLIES (HYM., SYMPHYTA).

BY ROBERT B. BENSON, M.A.

In preparing those parts of my proposed synopsis of the British sawflies dealing with the subfamilies Selandriinae and Blennocampinae (=Emphytinae and Blennocampinae) four new genera have been segregated. These are being described here so that the names can be used in the proposed synopsis. For definitions of the subfamilies mentioned reference should be made to my recent system of classification (Benson, 1938: 360 et seq.) and the note below under *Halidamia* gen. nov. The species selected below as genotypes are, in each instance, except in the case of *Apethymus* gen. nov., intended to be those species as interpreted by Enslin (1912-18). The reason for this is that the actual types of the species selected may prove to belong to entirely different species when the types are re-examined.

Melisandra gen. nov.

Selandriinae. Small dark insects with dark tegulae and infuscate wings.

Head behind the eyes very short, contracted and without a lateral post-occipital carina; mouth-parts normal; antenna in length does not exceed twice the breadth of the head behind the eyes. *Thorax* with a normal anterior prepectus to the mesepisternum, with a straight suture. Wings with the costa swollen at the apex to more than half the breadth of the stigma; wing venation as in *Selandria* Leach, but in the hindwing the cubital cell is widely separated from the costal cell, the basal nerve arising from the radius, not from the sub-costa, while the anal cell is pedunculate apically. *Tarsal claws* with sub-basal tooth. *Abdomen* smooth or slightly coriaceous; sawsheath narrow and simple.

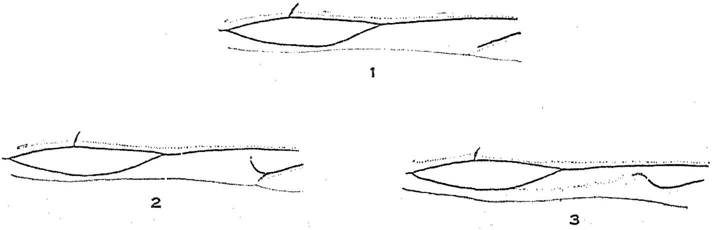
TYPE: *Selandria morio* (Fabricius) Enslin; includes also *T. cinereipes* Fabricius. These two species, both of which occur in Europe, including Britain, were included by Konow in *Selandria* Leach and by more recent workers in the subgenus or genus *Aneugmenus* Hartig. *Selandria* Leach and *Brachythops* Curtis (=*Coryna* Lep., 1828, nec Bosc., 1802) form a distinct tribe Selandriini (attached to sedges, grasses and reeds) having a V-shaped prepectal suture dividing the mesepisternum into an upper and lower sclerite, and the peculiar venation in the hindwing, in that the basal vein arises from the sub-costa instead of from the radius. *Aneugmenus* Hartig is restricted to those species attached to ferns and is separated from *Melisandra* gen. nov. by its hyaline wings, pale tegulae, lateral post-occipital carina on hind margin of head and absence of a peduncle to the anal cell of the hindwing.

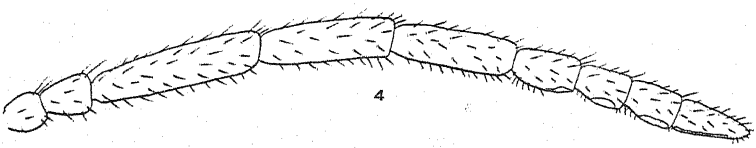
Stethomostus gen. nov.

Blennocampinae, tribe Phymatocerini.

Head with malar space shorter than half diameter of front ocellus, post-occipital carina present laterally, mouth-parts normal; antenna longer than breadth of head behind the eyes, though less than 1½ times this breadth. *Wings* infuscate, with basal and first recurrent veins subparallel; stub of second anal vein at base of forewing straight (Fig. 1), not curved up apically (cf. Fig. 2); hindwing without enclosed discoidal cell. *Thorax* with prepectus present in the form of an elongate raised anterior rim separated from mesepisternum by a punctured groove; claws simple; cenchri small, being further apart than the breadth of one.

TYPE: *Tomostethus fuligonosus* (Schrank) Enslin. Monotypic; confined, so far as is known, to Europe and attached to buttercups (*Ranunculus* spp.). Closely related to *Eutomostethus* Enslin and *Atomostethus* Enslin, both of which have much larger cenchri (closer together than the breadth of one) and the stub of the 2nd anal vein in the forewing curved apically towards the submedian.





Figs. 1-3.—Anal region of left forewing: 1, *Stethomostus fuliginosus* (Schrank) Benson, gen. nov.; 2, *Atomostethus ephippium* (Panz.) Enslin; 3, *Halidamia affinis* (Fallén) Benson, gen. nov. Fig. 4.—Antenna of female *Halidamia affinis* (Fallén) Benson, gen. nov.

Halidamia gen. nov.

Blennocampinae, tribe Blennocampini.

Head with malar space linear, much shorter than half diameter of front ocellus; mouth-parts normal; antenna (Fig. 4) with the four apical segments much shortened and slightly flattened laterally so that each is only about 1½ times longer than broad (viewed laterally); segments 6, 7 and 8 together about equal to 3 in length; segments 6, 7, 8 and 9 each with sensory pit on the underside; segments 1 and 2 slightly longer than broad; 3 longer than 4; post-occipital carina absent. *Thorax* with prepectus absent; hind legs with tarsal segments together about equal to length of tibia; hind basitarsus longer than three following tarsal segments, but shorter than four following; tarsal claws cleft at apex (the inner tooth being partly beside and partly behind the outer tooth) and with a large basal lobe. *Wings* with anal cell of front wing petiolate, but the basal stub of the anal vein is well developed and curved apically to approach the submedian vein; there is also often another stub attached to the anal cell (Fig. 3); hindwings without a closed discoidal cell and similar in ♂ and ♀.

TYPE: *Blennocampa affinis* (Fallén) Enslin. Monotypic; confined, so far as is known, to Europe. This species has heretofore been included in the genus *Blennocampa* Hartig, from which it differs in the form of the antenna and the anal cell of the forewing. In the antenna it differs particularly in the presence of the remarkable sensory pits not known in any other European genus, but characteristic of the neotropical *Waldheimia* Konow. The new genus appears to be closely related to *Waldheimia* and the nearctic *Erythraspides* Ashmead, as is shown by the form of the claws, etc., but differs in the form of the anal cell, and, from the latter, by the absence of a closed discoidal cell in the hindwing. In the form of the anal cell of the forewing it shows a stage intermediate between the Emphytinae and Blennocampinae. These two subfamilies are arbitrary groups, as I have already pointed out (Benson, 1938), separated from each other entirely on the form of this anal cell, and it would be better to fuse them together under the older of the names, Blennocampinae, still retaining the tribes already instituted. Some of these tribes will no doubt later be given subfamily rank.

Apethymus gen. nov.

Blennocampinae (=Emphytinae) tribe Emphytini.

Head with the mouth-parts normal, the clypeus emarginate to the depth of half its length medially, and the antenna exceptionally long (being at least as long as the hind tibia together with its tarsal segments), with its eighth segment more than four times as long as its apical breadth. Otherwise as in *Emphytus* Klug, s.r., but that the first transmedian vein of the forewing is received on the medius at a point which is between one-quarter and one-fifth times as far from the basal vein as the first recurrent vein.

TYPE: *Emphytus abdominalis* (Lepeletier) Benson; includes also *braccatus* Gmelin and *serotinus* Müller, all of which, so far as is known, are confined to Europe; these three species were recently separated by Benson (1935). Biologically they form a distinct group in that the adults are on the wing in the late summer and autumn and, unlike any other known European Tenthredinidae, pass the winter in the egg stage. Heretofore they have been included in *Emphytus* Klug, from which they differ (as from all other closely related genera) in their very long antennae; in the position of the 1st transmedian vein they differ from *Emphytus,* in which it is received on the medius at from one-third to one-quarter times as far from the basal as the 1st recurrent veins. *Allantus* Panzer has the 1st transmedian vein of the forewing coincident with the basal, while *Protemphytus* Rohwer (=*Emphytina* Rohwer) has it half-way between the basal and the 1st recurrent. *Macremphytus* MacGillivray has a very long hind basitarsus, longer than the following tarsal segments together.

REFERENCES.

BENSON, R. B. 1935. Some new British sawflies, with notes on synonymy, etc. (Hymenoptera Symphyta). *Ent. Mon. Mag.,* **71**: 239-45, figs. 1-2.

———— 1938. On the classification of sawflies Hymenoptera Symphyta. *Trans. R. Ent. Soc. Lond.,* **87**: 353-84.

ENSLIN, E. 1912-18. Die Tenthredinoidea Mitteleuropas, 1-7. *Deuts. Ent. Z.,* Beihefte 1912-17, Abb. 1-154.

Department of Entomology,
British Museum (Natural History),
London, S.W.7.
March 28th, 1939.

Gronops lunatus L. ab. seminiger All. (Col., Curculionidae) in Sussex.—On the last day of a fortnight's holiday at Seaford, Sussex, in July, 1934, I discovered a colony of *Gronops* living under *Erodium* and at grass roots growing round the edges of a small sandy hollow by the side of the cliff path leading from the front to Seaford Head. Of the specimens taken, most of which were in beautifully fresh and clean condition, the majority were quite typical in colour and markings; two, however, have the elytra dull black, with the pale markings much reduced, and in one of these specimens forming four prominent white spots, two oblique ones in the middle, and two at the apical angles, with patches of white scales on the apex itself; in the other the markings are dull brown, with two small spots in the middle, but the lower ones joined and forming a narrow band, and with the apex scantily clothed with brown scales. In the white-spotted example the head and thorax are clothed with brownish-grey scales, with patches of white scales on the head between the eyes, in the other they are dark brown, uniform with the colour of the elytral markings—the legs in both are ringed with light and dark scales as in the typical form.

The first-mentioned specimen at any rate is evidently the ab. *seminiger* All. referred to by Reitter (1916, Fauna Germanica: Käfer, **5**: 98), whose remarks may be translated as follows: 'Sometimes the elytra are reddish, the hinder third of the elytra and a lunate (*mondförmige*) spot before the middle white= ab. *c-nigrum* Rossi. (*rubricus* Ahr.) or they are blackish, the apex widely and the lunate spot white=ab. *seminiger* All.' Canon Fowler also had apparently seen these dark forms, as in his description of *G. lunatus* (1891, Col. Brit. Islands, **5**: 227) he says: 'The colour, however, is very variable, and some specimens appear quite light, and others pitchy and dark with the light bands very much reduced.' I rather suspect, however, that if he had had so extreme a form as mine before him he would have given it a varietal name, as the whiteness of the markings on the very dark ground, and their distinctive pattern, give it such a very different appearance from the type.

I have tried on subsequent visits to Seaford to rediscover the weevil (as I believe at least one other example of the dark form occurred, but was lost owing to a strong breeze), but unsuccessfully. I regret to say that on my last visit, in September, 1937, I found a motor-car standing over, and dropping oil upon, the exact spot where the colony had occurred!—F. B. Jennings, 152 Silver Street, Upper Edmonton, N. 18: *April 3rd*, 1939.

THE OCCURRENCE OF *TRIBOLIUM DESTRUCTOR* Uytt. IN SEEDS IN ENGLAND.

BY C. POTTER, PH.D., D.I.C.

In October, 1938, some specimens of a beetle were sent in by a seed merchant, accompanied by a letter stating that the beetle, which had been imported with a consignment of lantana seed from Italy, was causing trouble in the seed warehouse. The species was provisionally identified as *Tribolium destructor* Uytt., a determination subsequently confirmed by Dr. K. G. Blair. This species was first mentioned in 1933 (4), though not described until the following year from specimens found at Erfurt, Germany (5). It was then recorded as a pest of seeds in Germany and the Netherlands, but has not hitherto been detected in England.

The following records of its occurrence are to be found in the literature :—Uyttenboogaart (5) records it as attacking violet seeds of unknown origin at Erfurt, Germany. The larvae were reared experimentally on various seeds, bran, wool, cotton, etc.; Scholz (3) found the larvae attacking the roots of growing rye in Pomerania; Zacher (6) stated that it was found in stored seeds of various plants in several localities in Germany and in malt at Le Puy, France. Kemner (2) found it in bird seed in Malmö, Sweden. The seed included maize from Germany.

Dr. K. G. Blair has kindly supplied the following additional record:—Argentine, La Rioja Province, Patquia (*K. J. Hayward*), in British Museum.

These records suggest that *Tribolium destructor* has only recently become a pest of stored products and that it may become a serious one.

The following key is given to separate the three species, *Tribolium destructor* Uytt., *T. castaneum* Herbst. and *T. confusum* Duv., the last two commonly occurring as pests of stored products in this country.

1. Antennae gradually enlarged, eyes margined above, vertex forming a definite ridge over the eye .... 2.
—. Antennae with distinct three-jointed club, eyes not margined above, vertex

not raised into a definite ridge over the eyes; genae scarcely prominent; space separating the eyes ventrally equal to the diameter of the eye; body uniformly ferrugineous; length 3.0—3.9 mm. *T. castaneum* Herbst.

2. Space separating the eyes ventrally equal to about three times the diameter of the eye; genae very prominent, with the posterior end jutting out from the eye at approximately a right angle, body uniformly ferrugineous; length 3.0—3.9 mm. .... *T. confusum* Duv.

—. Space separating the eyes ventrally equal to nearly twice the diameter of the eye; posterior edge of genae not jutting out from the eye; body dark maroon with appendages lighter; length 4.5—5.5 mm. .... *T. destructor* Uytt.

NOTE:—*T. madens* Charp., which is occasionally found in stored products, has a distinct three-jointed club like *T. castaneum*, but the space separating the eyes ventrally is equal to three times the diameter of the eye; the body is black and the appendages reddish.

A detailed description of *Tribolium destructor* and a key to the species of the genus is given by Uyttenboogaart (5) and Good (1); both papers contain detailed descriptions of the genus, and that of Good contains a resumé of the available information with references to the literature.

REFERENCES.

(1) GOOD, N. E. 1936. The flour beetles of the genus *Tribolium*. *Tech. Bull. U.S. Dept. Agric.*, No. 498: 1—57.

(2) KEMNER, N. A. 1936. Två nya skadedjur inomhus, *Tribolium destructor* Uyttenb. och *Sitotroga cerealella* Oliv. [Two new indoor pests.] *Opusc. Ent.*, **1**: 56—58.

(3) SCHOLZ, R. 1934. *Tribolium* (*Stene*) *destructor* Uyttenb. *Ent. Bl.*, **30**: 44—45.

(4) UYTTENBOOGAART, D. L. 1933. [No title.] *Tijdschr. Ent.*, **76**: xli—xlii.

(5) ———— 1934. Revision des Genus *Tribolium* (Col. Ten.). *Ent. Bl.*, **30**: 20—31.

(6) ZACHER, F. 1935. Beobachtungen über Speicherinsekten. *Anz. Schädlingsk.*, **11**: 63—66.

Department of Insecticides and Fungicides,
Rothamsted Experimental Station,
Harpenden, Herts.

March 10th, 1939.

CRYPTOPLEURUM CRENATUM PANZ. (COL., PALPICORNIA, SPHAERIDIINAE): NEW TO THE BRITISH LIST.

BY K. M. GUICHARD.

On April 1st, 1938, I casually picked up a small beetle on a patch of gravel on the Heath Extension, Hampstead Heath. Under the microscope it proved to be a *Cryptopleurum* markedly different from the common *C. minutum* F. (=*atomarium* Oliv.). Mr. J. Balfour-Browne kindly examined it, and later confirmed his impression that it was another species, *C. crenatum* Panz. He also found one specimen of this species in the *C. minutum* series in the Power Collection, labelled 'Shirley,' one in the Sharp Collection (New Forest, Nov. 15-20, 1868), and two more in the Stephens Collection (*sine loc.*).

I had intended to leave the description and recording of this addition to the British list in Mr. Balfour-Browne's more capable hands, but owing to pressure of work he asked me to do this myself. I have given to him my Hampstead specimen of *C. crenatum.*

In France, *Cryptopleurum crenatum* is well known to coleopterists. Rey records (1885 (1886), *Ann. Soc. Linn. Lyon.*, **32**: 172): 'Cette espèce est peu commune. Elle se trouve dans les bouses, les crottins, les fumiers, et les détritus dans le bassin de la Seine, le Bourbonnais, le Bugey, les Alpes, les environs de Lyon, le Beaujolais, les Pyrénées, etc.'

The two species of *Cryptopleurum* may be distinguished as follows :—

(*a*) Interstices of elytra convex for their entire length; elytral striae deeply impressed from their base; labrum emarginate at the apex. .... 1. *C. crenatum* Panz.

(*aa*) Interstices of elytra flat for the basal two-thirds of their length, posteriorly convex on the apical declivity. Elytral striae lightly impressed except on the apical declivity; labrum truncate at apex ... 2. *C. minutum* F.

Rey mentions (*l.c.*: 174) in his observations on *C. minutum* other comparative differences between the two species: 'Elle est très voisine du *C. crenatum.* Elle s'en distingue par une taille généralement moindre; par ses palpes d'une couleur ordinairement plus foncée; par ses élytres moins obtusément arrondies à leur extrémité,' etc.

However, these slight differences are difficult to appreciate when there is little material available for comparison, but the convexity of the elytral interstices will at once distinguish *crenatum.*

It is curious that this species has not been recognised definitely as British. Stephens (1829, Ill. Brit. Ent., Mand., **2**) does not mention *crenatum*, but in 1839 (Man. Brit. Col.: 95, No. 744) he records the species as 'abundant in London district: 4-6,' i.e. April-June. There are, however, only two specimens in his collection mixed with thirteen specimens of *minutum* (Fab.) standing over the name '*Cercyon atomarium.*' I think there is little doubt that he had not really recognised the distinctions between the two species.

10 Lyndhurst Gardens,
Hampstead, London, N.W.3.
March 12th, 1939.

CRYPTOPLEURUM MINUTUM FAB. AND *C. CRENATUM* PANZ. (COL., PALPICORNIA, SPHAERIDIINAE).

BY C. E. TOTTENHAM.

Mr. Guichard having told me that he had found a specimen of *Cryptopleurum crenatum* Panz. in this country and having sent a note about it to this journal, I took the first opportunity to examine the material of the genus in Mr. R. W. Lloyd's collection and in my own. The following are the results of this examination:—

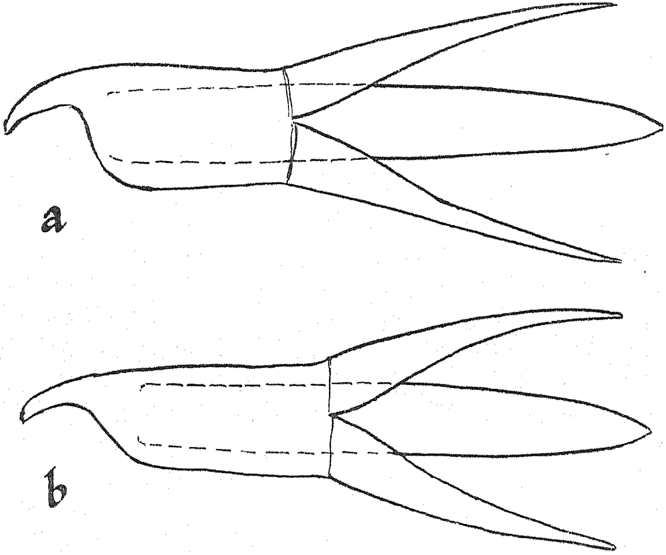
In Mr. Lloyd's collection the genus is represented by fifteen specimens from the following localities:—Oxshott (SR), Ramsbury (NW), Loch Erricht (EI) and Chilbolton (NH) (1898).

In my collection it is represented by 185 specimens from these localities:—Chichester (WX), Burgess Hill (EX), Hurley (BK), Swanage (DT), Wicken Fen (CB), Tewkesbury (GE), Cusop (HF), Wixford (WW), Fladbury and Shelsey (WO), Holme Fen (HU), Everton (NM), Skipwith (SY), E. Ardsley (WY), Kearby, Askwith and Leeds (MY), Black L. (NN), Pamber (NH).

The single specimen from Chilbolton in Mr. Lloyd's collection first attracted my attention, and it proved to be a male specimen of *C. crenatum* Panz. All the other specimens in this collection were *C. minutum* Fab. Amongst my own specimens I could only find two examples of *crenatum*, namely the single specimen from Shelsley, a female, and one of a long series from Kearby, a male. Therefore all the *place* records given above with the exception of two only (Chilbolton and Shelsley) refer to *C. minutum* Fab., but *all* the county and vice-county records still apply to that species.

It would appear that *C. crenatum* is decidedly rare in this country, although of a wide distribution. The percentage of specimens which proved to be this species shows this. But while it might be argued that the percentage figure does not give a true picture, since nearly eighty per cent. of the total number of specimens came from the Cambridge and Yorkshire localities, against this must be set the fact that one of the *crenatum* examples was taken at Kearby, together with a very long series of *minutum*.

C. minutum shows considerable variability in sculpture, but there is always a certain amount of flatness about the base of the elytra: although by taking two extreme forms one might be tempted to wonder whether there were two species (and suspect one of being *crenatum*), yet all intermediates between the extremes exist, and still further, when once one has seen a specimen of *crenatum* no doubt is left as to its distinctness. Continental authorities (e.g. Ganglbauer, 1904, Käf. Mitt., **4**: 285) have also given the transverse channel on the front of the head as a specific character, this being interrupted in the middle in *minutum*, but entire in *crenatum*. So far as the material examined is concerned this character is valid, and although only three specimens of *crenatum* have been examined, I have no doubt that the character is a reliable one. Care, however, must be used, for there is, in *minutum*, a slight depression right across which is apparent in certain lights, but the channel is distinctly broken for some distance in the middle and is deeper than the depression with which it coincides.



Aedeagus of: a, *Cryptopleurum minutum* Fab.; b, *C. crenatum* Panz.

I have prepared balsam mounts of the aedeagus of the two species, and from them drawn the accompanying camera lucida figures. This organ is distinctly different in the two species, the lateral lobes being short and rather abruptly narrowed in *crenatum*, but very long and slender in *minutum*. Viewed laterally there is a curvature on the median lobe in both species, and the lateral lobes lie approximate to the median lobe; under slight pressure they open outwards, and it is thus that I have figured them to show better the essential differences.

88 Station Avenue, W. Ewell.
March 17th, 1939.

Strehlocera fulviceps Westw. (*Hym., Braconidae*) *in Dumfriesshire.*—Since Prof. J. O. Westwood first captured a single female of this curious Braconid in Coombe Wood in August, 1833, very few others have occurred. I was greatly surprised to find a specimen among my captures of the evening of June 26th, 1936. I had been beating and sweeping along a hedgerow bordering a potato field about two miles north of Gretna. The hedge consisted mainly of hazel with some hawthorn and blackthorn. On another side the field is bordered by the main L.M.S. Railway. Whether native or imported I cannot say, but I have so far failed to find any more, although I have spent many hours in the quest, both in 1937 and 1938. Marshall gives a good figure (1887, *Trans. Ent. Soc. Lond.*, **1887**: Pl. V, fig. 2), and Lyle (1926, *Entomologist*, **59**: 259) figures an antenna. Mr. G. E. J. Nixon has seen, and confirmed, the identity of my specimen.—JAS. MURRAY, 6 Burnside Road, Gretna, N.B.: *March 13th,* 1939.

Pionosomus varius Wolff. and Odontoscelis sp. (*Hem., Heteropt.*) *in Pembrokeshire.*—When working the sandhills at Freshwater West in the S.W. corner of Pembrokeshire, on September 8th, 1938, I took a single example of the former species running on the sand amongst scanty grass. Under a plant of *Erodium cicutarium* L'Hér., I found two small larvae of one of the two species of *Odontoscelis*. This is a very considerable and interesting extension of the known range of these species, especially of the former, which has, I believe, only been previously recorded from East Kent. Both species of *Odontoscelis* have been reported from as far west as the Isle of Wight at any rate.—H. W. DALTRY, F.R.E.S., Bar Hill, Madeley, Crewe: *March 16th,* 1939.

Reviews.

'AN ECOLOGICAL GLOSSARY.' By J. R. CARPENTER. 8vo, ix+306 pp., 12 appendices. Kegan Paul, Trench, Trubner & Co. Ltd., London. 1938. Price 15/-.

New subjects necessarily demand new vocabularies, but in ecology the coining of new words has so outstripped progress in real knowledge that in many instances their use confuses rather than enlightens the reader, whose position is not helped by the existence of much synonymy in terminology due to the isolation of workers in different fields. Mr. Carpenter has bravely attempted to compile a list of the chief terms used, giving over 3,000 of them with definitions accompanied by references to original sources or to more recent citations, in many of which a different meaning is introduced. The appendices include important tables and maps indicating the use of some of the terms. His work will be valuable to botanists, zoologists, hydrobiologists and entomologists alike, but ecology is still rapidly developing and until stability is attained such a glossary can only be provisional. A later edition might with advantage include derivations as present day students usually lack the classical grounding which was customary a generation or so ago.—B.M.H.

'ANALES DE LA ESCUELA NACIONAL DE CIENCIAS BIOLOGICAS.' Published by the Secretaria de Educación Publica, Instituto Politécnico Nacional, D.A.P.P., Mexico, D.F. Vol. 1, No. 1, 171 pp., 33 pls. (Oct., Nov., Dec., 1938). Foreign subscription $3 (U.S.A.) annually.

The first number of this biological journal contains two papers of interest to entomologists, one by T. Dobzhansky and D. Sokoloff on the structure and variation of the chromosomes in *Drosophila azteca* Sturt. & Dob. and another by A. Dampf describing a new species of *Phlebotomus* from Texas.—B.M.H.

THE MALLOPHAGA (BITING-LICE) RECORDED FROM THE PACIFIC ISLANDS.

BY GORDON B. THOMPSON.

(*Continued from p. 76.*)

83. *Degeeriella minhaensis* (Kellogg and Chapman).

Nirmus minhaensis Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, p. 157, Pl. 13, f. 2.

Recorded host: *Acridotheres tristis* (L.).

Locality: Hawaiian Is., Maui I.

84. *Degeeriella nebulosa* (Burmeister).

Nirmus nebulosus Burmeister, 1838, Handbuch der Entomologie, II, p. 429.

Degeeriella nebulosa (Burmeister), Johnston and Harrison, 1912, Trans. N.Z. Inst., XLIV, p. 368.

D. nebulosa (Burmeister), Harrison, 1916, Parasitology, IX, p. 118.

Recorded host: *Sturnus vulgaris* Linn.

Locality: Kermadec Is.

85. *Degeeriella obtusa* (Kellogg and Kuwana).

Nirmus obtusus Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 468—469, Pl. XXIX, f. 2.

Recorded host: *Sterna fuscata crissalis* (Lawrence).

Locality: Galapagos Is., Clipperton I.

86. *Degeeriella oliveri* Johnston and Harrison.

Degeeriella oliveri Johnston and Harrison, 1912, Trans. N.Z. Inst., XLIV, p. 367, f. 3.

Recorded host: *Phaeopus phaeopus variegatus* (Scop.).

Locality: Kermadec Is.

87. *Degeeriella oraria* (Kellogg).

Nirmus orarius Kellogg, 1896, Proc. Calif. Acad. Sci., VI, Ser. 2, pp. 104-105, Pl. 5, f. 5.

N. oraria hawaiiensis Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, p. 159.

Degeeriella oraria (Kellogg), Johnston and Harrison, 1912, Trans. N.Z. Inst., XLIV, p. 368.

D. oraria (Kellogg), Waterston, 1928, Insects of Samoa, Pt. VII, fasc. 3, p. 81.

Recorded hosts: *Pluvialis dominicus fulvus* (Gmelin); *Fulica alai* Peale.

True host: *Pluvialis dominicus fulvus* (Gmelin).

Localities: Hawaiian Is., Maui I.; Kermadec Is.; Samoa, Upolu, Apia.

88. *Degeeriella paludicola* (Kellogg and Kuwana).

Nirmus paludicola Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 469-470, Pl. XXIX, f. 3.

Recorded host: *Butorides sundevalli* Reichenow.

Probable true host: ?

Locality: Galapagos Is., Albemarle I.

89. *Degeeriella ridgwayi* (Kellogg).

Nirmus ridgwayi Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, pp. 317-318.

Recorded host: *Haematopus palliatus galapagensis* Ridgway.

Locality: Galapagos Is., Indefatigable I.

90. *Degeeriella separata* (Kellogg and Kuwana).

Nirmus gloriosus Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 467-468, Pl. XXIX, f. 1 (part).

N. gloriosus var. *emarginatus* Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, p. 159.

N. separatus Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 472-473, Pl. XXIX, f. 6.

N. separatus Kellogg and Kuwana, 1906, Trans. Amer. ent. Soc., XXXII, p. 317.

Degeeriella separata (Kellogg and Kuwana), Harrison, 1916, Parasitology, IX, p. 123.

D. separata (Kellogg and Kuwana), Ferris, 1932, Bull. Bishop Mus., Honolulu, 98, pp. 69-70, f. 19.

D. separata (Kellogg and Kuwana), Ferris, 1935, Bull. Bishop Mus., Honolulu, 113, p. 12.

Recorded hosts: *Platyspiza crassirostris* (Gould); *Progne modesta* (Neboux); *Geospiza conirostris conirostris* Ridgway; *G. fortis* Gould; *Certhidea olivacea* Gould; *Anous stolidus galapagensis* Sharpe; *Sterna fuscata crissalis* (Lawrence); *Anous stolidus* (Linn.); *Nesopelia g. galapagoensis* (Gould).

Proable true hosts: *Anous* spp.

Localities: Galapagos Is., Albemarle I., Hood I., Clipperton I.; Hawaiian Is., Maui I.; Marquesas Is., Mohotani; Tahiti, Hitiaa.

91. *Degeeriella stenozona* (Kellogg and Chapman).

Nirmus stenozona Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, p. 158, Pl. XIII, f. 3.

Recorded hosts: ? *Uroloncha punctulata nisoria* (Temm. and Laug.) (*Munia nisoria*); *Vestiara coccinea* (Forster).

Locality: Hawaiian Is., Hilo.

92. *Degeeriella vulgata* (Kellogg).

Nirmus vulgatus Kellogg, 1896, Proc. Calif. Acad. Sci., VI, Ser. 2, pp. 496-498, Pl. LXVII, f. 5.

N. vulgatus Kellogg, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 474.

N. vulgatus var. *galapagensis* Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 474-475.

Recorded hosts: *Geospiza f. fuliginosa* Gould; *G. fortis* Gould; *G. c. conirostris* Ridgway; *G. scandens intermedia* Ridgway; *Nesomimus macdonaldi* Ridgway; *N. p. parvulus* (Gould); *N. melanotis* Gould; *N. parvulus barringtoni* Rothschild; *Cactospiza pallida producta* (Ridgway); *Camarhynchus affinis* Ridgway; *C. p. parvulus* (Gould); *Certhidea olivacea* Gould; *C. beckii* Rothschild; *Dendroica petechia aureola* (Gould); *Myiarchus magnirostris* Gray; *Pyrocephalus manus intercedens* Ridgway; *Sterna fuscata crissalis* (Lawrence).

Probable true hosts: All the above except *Sterna fuscata crissalis* (Lawrence).

Localities: Galapagos Is., Albemarle I., Narborough I., Chatham I., Hood I., Gardner I., Barrington I., Clipperton I., Wenman I.

93. *Rallicola advena* (Kellogg).

Oncophorus advena Kellogg, 1896, Proc. Calif. Acad. Sci., VI, Ser. 2, pp. 133-135, Pl. XI, f. 1, 2.

O. advena Kellogg, Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, p. 160.

Rallicola advena (Kellogg), Harrison, 1916, Parasitology, IX, p. 126.

Recorded hosts: *Fulica alai* Peale; *Vestiara coccinea* (Forst.); *Heteractitis incanus* (Gmelin).

Probable true host: *Fulica alai* Peale.

Localities: Hawaiian Is., Maui I., Kahului, Hilo.

94. *Columbicola columbae* (Linn.).

Pediculus columbae Linn., 1758, Syst. Nat., p. 614.

Lipeurus baculus Nitzsch, 1866, Z. ges. Naturw. XXVII, p. 118.

L. baculus Nitzsch, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 478.

L. baculus Nitzsch, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 320.

Columbicola columbae (Linn.), Ewing, 1929, A Manual of External Parasites, pp. 116, 190.

Recorded hosts: *Anous stolidus galapagensis* Sharpe; *Geospiza f. fuliginosus* Gould; *Nesomimus melanotis* (Gould); *Cactospiza pallida producta* (Ridgway); *Nesopelia g. galapagoensis* (Gould).

Probable true host: *Nesopelia galapagoensis* (Gould).

Localities: Galapagos Is., Clipperton I., Albemarle I., Wenman I.

95. *Halipeurus diversus* (Kellogg).

Lipeurus diversus Kellogg, 1896, Proc. Calif. Acad. Sci., VI, Ser. 2, pp. 123-124, Pl. VIII, f. 3, 4.
L. limitatus Kellogg, 1896, Proc. Calif. Acad. Sci., VI, Ser. 2, pp. 124-125, Pl. VIII, f. 5, 6.
L. limitatus Kellogg, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 476.
L. diversus Kellogg, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 476.
L. diversus major Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 477.
L. diversus Kellogg., 1906, Trans. Amer. ent. Soc., XXXII, p. 318.
L. limitatus Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 319.
Halipeurus diversus (Kellogg), Thompson, 1936, Ann. Mag. nat. Hist., Ser. 10, XVIII, p. 41.

Recorded hosts: *Puffinus obscurus subalaris* Ridgway; *Anous stolidus galapagensis* Sharpe; *Butorides sundevalli* Reichenow; *Fulmarus* sp.; *Pterodroma phaeopygia* (Salvin).

Probable true hosts: *Puffinus obscurus subalaris* Ridgway; *Pterodroma phaeopygia* (Salvin).

Localities: Galapagos Is., Narborough I., Albemarle I., Culpepper I., Wenman I., Clarion I.

96. *Halipeurus kermadecensis* (Johnston and Harrison).

Lipeurus kermadecensis Johnston and Harrison, 1912, Trans. N.Z. Inst., XLIV, pp. 365-366, f. 1.
L. diversus excavatus Johnston and Harrison, 1912, Trans. N.Z. Inst., XLIV, p. 366, f. 2.
Halipeurus kermadecensis (Johnston and Harrison), Thompson, 1936, Ann. Mag. nat. Hist., Ser. 10, XVIII, p. 41.

Recorded host: *Pterodroma neglecta* (Schlegl.).

Localities: Kermadec Is.; Sunday I.

(*To be continued.*)

A PRELIMINARY LIST OF IRISH FLEAS.

BY EUGENE O'MAHONY.

The literature of Irish Siphonaptera, as far as I have ascertained, consists of some notes by the late N. C. Rothschild in 'A Synopsis of the British Siphonaptera' (1915, *Ent. Mon. Mag.*, **51** : 49-112), a note by the same author in the *Irish Naturalist* (1899, **8**: 266), a record of one species in the *Irish Naturalists' Journal* (1934, **5** : 72) by J. A. S. Stendall, and there are a number of species recorded by G. B. Thompson in the *Entomologist's Monthly Magazine* since 1934. I refer to these records under the various species except in the case of those mentioned in the 'Synopsis,' as the specimens from which the records come are in the national collection, and I am enabled to give the actual localities, whereas the 'Synopsis' only states: 'Also taken in Ireland.' The object of this paper is to record all the species taken in Ireland, and to bring together all the published records I can find so as to have as complete a preliminary list as possible. The material in the national collection was named by N. C. Rothschild, and there are some slides named by G. B. Thompson; my own material was determined by myself and verified by Dr. K. Jordan.

I wish to thank various friends for specimens and in particular F. G. Meagher, F. W. Fox and A. E. Williams; my thanks are also due to Dr. K. Jordan for verifying my determinations and to Mr. G. B. Thompson for much advice and help. The twenty species so far found in Ireland belong to the following families, and unless where otherwise stated I am responsible for the record and the naming:—Pulicidae, 4; Ceratophyllidae, 10; Leptopsyllidae, 1; Hystrichopsyllidae, 2; Ischnopsyllidae, 3.

PULICIDAE.

Pulex irritans L.—DUBLIN: City, x.1938, A. K. Jackson; Dollymount, ii.1939. CORK: Glengarriff, vii.1935, A. W. Stelfox. LEITRIM: Carrick-on-Shannon ii.1939.

Archaeopsylla e. erinacei Bouché.—DUBLIN: St. Annes, Clontarf, 17.iii.1925, on *Erinaceus europaeus* L., det. G.B.T. (*cf.* 1935, Ent. Mon. Mag., **71** : 215). ROSCOMMON: 13.xii.1938, on *Vulpes v. crucigera* Bech., a male without prothoracic comb ('a rare anomaly,' *sec.* Dr. K. Jordan *in litt.*).

Ctenocephalides f. felis Bouché.—DUBLIN: 19.ix.1938, on cat; Zoological Gardens, 1.ix.1903, on jackal, *det.* N.C.R., Nat. Mus. coll.

Spilopsyllus cuniculi Dale.—DUBLIN: Boherboy, Saggart, 10.ii.1939, F. W. Fox, on *Oryctolagus cuniculus* L. WICKLOW: Rocky Valley, R. F. Scharff, on cat, det. N.C.R., Nat. Mus. coll. GALWAY: 23.xii.1938, F. G. Meagher, on *Oryctolagus cuniculus* L.

CERATOPHYLLIDAE.

Ceratophyllus styx Roths.—Dublin: Holmpatrick, Skerries, 11.ix.1929, from nest of *Riparia r. riparia* (L.), det. G.B.T. (*cf.* 1934, Ent. Mon. Mag., **70**: 204, footnote), Nat. Mus. coll.

Ceratophyllus garei Roths.—Clare: The Bills, 21.vi.1910, R. J. Welch, from nest of *Larus marinus* L. or *Fratercula a. grabae* (Brehm.), det. N.C.R., Nat. Mus. coll. Antrim: Aghalee, viii.1935, J. Kerr, from nest of *Hirundo r. rustica* L., det G.B.T. (*cf.* 1937, Ent. Mon. Mag., **73**: 106).

Ceratophyllus columbae Walck. and Gerv.—Dublin: National Museum, viii.1938 from nest of pigeon, *Columba livia* Gmel.

Ceratophyllus vagabunda insularis Roths.—Antrim: Sheep Isd., off Ballintoy, vii.1935, J. Kerr, from nest of *Fratercula a. grabae* (Brehm.), det. G.B.T. (*cf.* 1937, Ent. Mon. Mag., **73**: 88).

Ceratophyllus gallinae Schr.—Dublin: Drimnagh, 2.v.1937, from nest of *Sturnus v. vulgaris* L., det. G.B.T. Galway: Cashel, from nest of *Fringilla c. gengleri* Klein., det. N.C.R., Nat. Mus. coll.

Nosopsyllus fasciatus Bosc.—Dublin: St. Annes, Clontarf, 3.xii.1938, and North Bull, xii.1938, on *Apodemus s. sylvaticus* (L.); Rathgar, 8.iii.1939; Clontarf, iii.1939; Dames St., xii.1938, A. E. Williams; the specimens from these localities were taken from *Rattus norvegicus* Erxl. Wicklow: Rocky Valley, 23.i.1919, R. F. Scharff, on *Apodemus s. sylvaticus* L., det. N.C.R., Nat. Mus. coll.

Dasypsyllus gallinulae (Dale).—Dublin: at foot of south cliffs, Howth, 24.v.1930, host unknown, det. G.B.T.

Monopsyllus sciurorum (Schr.).—Galway: 7.x.1938 and 20.xi.1928, A. E. Williams, on *Sciurus v. leucourus* Kerr.

Paraceras melis (Walker).—Derry: Ballykelly Wood, iii.1934, S. A. Hunter, on *Meles m. meles* L., det. G.B.T. (*cf.* 1935, Ent. Mon. Mag., **71**: 216; J. A. S. Stendall, 1934, Irish Nat. J., **5**: 72).

Ctenophthalmus agyrtes nobilis Roths.—Dublin: Kilbarrack, xi.1925, on *Apodemus s. sylvaticus* L., det. G.B.T.; Sutton, 1.xii.1925, same host; St. Annes, Clontarf, 18.iii.1939, on *Rattus norvegicus* Erxl.; North Bull, x.1938, on *Apodemus;* a single female was taken from a dead *Uria a. albionis* With. on the strand at this locality, obviously a stray. Wicklow: Rocky Valley, 14.ii.1916, R. F. Scharff, on *Apodemus s. sylvaticus* L., det. N.C.R., Nat. Mus. coll.

LEPTOPSYLLIDAE.

Leptopsylla segnis Schon.—Dublin: National Museum, 21.x.1932, on *Mus m. musculus* L., det. G.B.T.; 'Dublin' on same host (*cf.* N.C.R., 1899, Irish Nat., **8**: 266).

HYSTRICHOPSYLLIDAE.

Typhloceras poppei Wagner.—Dublin: Kilbarrack, 11.xi.1925, on *Apodemus s. sylvaticus* L., det. G.B.T. (*cf.* 1935, Ent. Mon. Mag., **71**: 216). Wicklow: Rocky Valley, 23.i.1919, R. F. Scharff, on same host, det. N.C.R., Nat. Mus. coll. Galway: Clare Island, Dr. C. J. Patten, on same host, det. N.C.R., Nat. Mus. coll.

Hystrichopsylla talpae (Curtis).—Dublin: Clontarf, 25.x.1924, on *Apodemus s. sylvaticus* L., det. G.B.T.; same locality, 29.xii.1924, on *Mus m. musculus* L., det. G.B.T. (*cf.* 1935, Ent. Mon. Mag., **71**: 217). Wicklow: Rocky Valley, 23.i.1919, R. F. Scharff, on *Apodemus s. sylvaticus* L., det. N.C.R., Nat. Mus. coll.

Ischnopsyllidae.

Ischnopsyllus octactenus Kolen.—Wicklow: Rocky Valley, 29.i.1915, R. F. Scharff, on *Nyctalus leisleri* Kuhl., det. N.C.R., Nat. Mus. coll.; Bray River, on same host, N.C.R. (*cf.* 1899, Irish Nat., **8**: 266). Fermanagh: Boho, on *Myotis nattereri* Kuhl., Nat. Mus. coll. 'Ireland,' no locality, on *Pipistrellus p. pipistrellus* Schr.

Ischnopsyllus simplex Roths.—Fermanagh: on *Myotis nattereri* Kuhl., Nat. Mus. coll.

Ischnopsyllus hexactenus Kolen. — Meath: on *Plecotus auritus* L., det. N.C.R., Nat. Mus. coll. Cork: Mallow, on same host, det. N.C.R., Nat. Mus. coll. Tyrone: 14.ix.1933, on same host.

National Museum of Ireland,
Kildare Street, Dublin.
April 11th, 1939.

Deronectes griseostriatus De G. and Hygrobia tarda Herbst. (Col.) from the same Irish locality.—To find these two species together in the same locality must surely constitute a unique experience when one considers how utterly different their normal habitats are. In the Boulagh Loughs (altitude c. 2,000 ft.) on the Comeragh Mts., Co. Waterford, Southern Ireland, on 30.vii.36, I took these two species together. I did not recognise the *griseostriatus* at the time, but on a subsequent visit (3.viii.38, when I did not find any more *Hygrobia*) I brought some of the *Deronectes* home, and their identification has been kindly settled by Professor Balfour-Browne. The Boulagh Loughs—there are three pools inter-connected—are some seven miles from Rathgormack, the nearest village, and a considerable and circuitous climb is necessary to reach them. The three are very similar in character, and have a stony-gravel bottom which in places is sandy—the nearest approach to the 'silt-bottom' of the customary *Hygrobia*-habitat. A stream has its source just above, and runs through them, providing sufficient flow for such a species as *D. 12-pustulatus* Fab. Considering the altitude, their temperature did not appear to be low. Moss, *Juncus* and *Ranunculus* appeared to be the dominant items in the flora. In all some twenty-four species of Coleoptera and Hemiptera were noted, including on 30.vii.36 a single *Acilius*. I understand that the discovery of the *griseostriatus* there constitutes a new record for Co. Waterford and this area generally.—Rev. E. J. Pearce, M.A., F.R.E.S., House of the Resurrection, Mirfield, Yorks: *April 25th*, 1939.

Hydrovatus clypealis Sharp (Col., Dytiscidae) in Sussex.—On the 8th May I brought home from a ditch at Lewes, at the north end of the Levels, a small beetle, which proved to be a female *Hydrovatus clypealis* Sharp. On 9th May, in a pond at Ringmer (three miles N.E. of Lewes), I took a male specimen of this insect. I am told that the beetle has been found in this neighbourhood before, but can find no record for Sussex. After fifteen years work in this district I have now met it for the first time. — C. J. Saunders, The Lawn, Barcombe Mills, nr. Lewes: *May 11th*, 1939.

Early Dragon-flies.—It may be worth recording, on account of the very early date in a backward season, that I saw on my ground here a teneral specimen of *Pyrrhosoma nymphula* Sulz. on April 18th, and a correspondent wrote that he had seen one at Wisley, Surrey, on the 19th. — F. H. Haines, Linwood, Ringwood, Hants: *May 2nd*, 1939.

SOME NEW SPECIES OF STAPHYLINIDAE (COL.).

BY C. E. TOTTENHAM, M.A., F.R.E.S.

The following new species of Staphylinidae are chiefly from Africa. Some of them were included in a box of beetles sent to me for determination by Dr. Arnold, of the Rhodesian Museum: he stated that they were mainly from the O'Neil Collection, and presumably O'Neil was the collector where no other name is stated. Others are in my own collection, in which most of the African species were obtained from Capt. Stephenson.

I have retained the generic name *Zyras* Stephens until its validity shall have been considered by the Nomenclature Committee of the Royal Entomological Society of London, although it is exceedingly doubtful whether the name can stand under the rules. *Bolitochara* was a generic name proposed previously by Mannerheim (1837) for an assortment of small Staphylinids. Since Westwood fixed *collaris* Payk. as the type of *Bolitochara,* this generic name cannot be used in the sense in which it was limited by Erichson and in which it is used to-day, but becomes the generic name for the species now known as *Zyras* Stephens (=*Myrmedonia* Erichson), and *Zyras* must be sunk as a synonym. So long as *collaris* Paykull and *haworthi* Stephens are placed in the same subgenus, the name *Zyras* is not available as a subgeneric name, for *Zyras* is a monabasic genus with *haworthi* Stephens as its type.

Zyras bustuarius n.sp.

Light reddish-brown, head a little darker, 1st segment of antennae lighter.

Head strongly transverse, triangularly produced in front; eyes large, not prominent, occupying nearly the whole of the sides; posterior angles obtuse, but rounded; base strongly rounded at sides; surface smooth in front, otherwise fairly closely, very finely and shallowly punctured, and with a close, fine ground sculpture which gives it a moderately dull appearance. *Antennae* short and stout, a little longer than head and thorax; first segment fairly long, much broadened at apex; second very short, but longer than broad; third much longer than second; these two together about equal in length to the first; fourth to tenth all strongly transverse, of about equal length, the fourth, fifth and tenth a little narrower than the others; eleventh about equal to the three preceding together, broad at base, conical. *Thorax* distinctly transverse; anterior margin broadly rounded; anterior angles obtusely rounded; sides straight, convergent towards the base; posterior angles obtusely rounded; base broadly rounded; puncturation and ground sculpture very similar to that of head, but puncturation a little larger and more diffuse; surface slightly dull. *Elytra* at the suture slightly longer than the thorax, much longer at the sides where they are about as long as together broad; apical margins straight; puncturation as close as that of thorax, but much stronger and more distinct; ground sculpture less distinct; surface much more shining than that of head and thorax, but less so than that of abdomen; clothed with very short, scanty, light pubescence. *Abdomen* smooth, shining, impunctate.

Length 7 mm.

Male.—Third tergite (first visible) with raised, curved side margins; base straight, bordered on each side with a prong which reaches the apical margin of the next segment; these prongs are nearly straight, slightly divergent, but do not extend outside the abdomen; sixth tergite feebly emarginate at apex, in the middle with a very small indistinct longitudinal keel; seventh tergite in the middle with a distinct short raised longitudinal keel.

RHODESIA: Dunbrody, 7.iv.1903; two males.

Type in Rhodesian Museum; paratype in my collection.

The species bears a close resemblance to *Z. cylindricus* Bernh., from which it may be distinguished by its more transverse antennal segments, larger size and closer puncturation.

Zyras potor n.sp.

A large dark reddish-brown species, with the head and four apical segments of the abdomen blackish.

Head with eyes very broad, more than half as broad again as long; front triangular but rounded, impunctate, ligher than the rest of the head, which is fairly evenly punctured with distinct shallow punctures; eyes large, occupying nearly the whole of the sides of the head; head behind eyes strongly narrowed; posterior angles rounded; whole surface covered with a minute ground sculpture which consists of tiny punctures. *Antennae* long, reaching almost to the apex of the elytra, with the segments strongly flattened; first segment fairly long and much broadened at apex; second narrow and short; third twice the length of the second, gradually widened to apex; fourth transverse; fifth and sixth about as long as wide; seventh longer than wide; sixth to eleventh decreasing slightly in width, the penultimate segments being about as long as their apical width; eleventh twice as long as tenth, cylindrical, acuminate at apex. *Thorax* quadrate, a little broader than long, in front as wide as the head; anterior margin a little produced and rounded; anterior angles broadly rounded, obtuse; sides rounded in front, concave in the middle, and thence straight to the posterior angles, which are obtuse and distinct; base evenly rounded; thorax widest at the anterior third; puncturation and ground sculpture as on the head. *Elytra* much broader than the thorax, together about one-third broader than long; puncturation and ground sculpture very similar to that of head and thorax, but the punctures perhaps a little stronger, and set with very short, fine, light hairs. *Abdominal* segments smooth and shining, with a very few, very minute, scattered punctures.

Length 10 mm.

RHODESIA: Plumtree, 10.i.1907.

Type (♀, unique) in my collection.

This species, in size and general appearance, is rather like a large specimen of *Z. satelles* Er. From this species, and also from *Z. procax* Pér., it is easily distinguished by the longer and more finely punctured thorax, more shining head, more distinct ground sculpture of the thorax and elytra, and by the longer antennal segments. From *Z. mirabilis* Bernh. it may be distinguished by its longer antennal segments, more shining surface, and less close and less coriaceous puncturation. The antennae are similar to those of *Z. spatha* Cam., but this species is much darker and has the elytra much more weakly punctured than is the case in *Z. potor*.

Zyras spurcus n.sp.

A large, dark reddish-brown species, with the head and the last four abdominal segments blackish.

Head strongly transverse, with large prominent eyes, which occupy nearly the whole of the sides; front considerably produced and rounded; posterior angles very obtusely rounded; base slightly rounded; puncturation fairly even, distinct but shallow, diffuse; ground sculpture very fine. *Antennae* short, a little longer than the head and thorax; first three segments narrow at base, strongly widened at apex; third distinctly shorter than first; second about two-thirds the length of third; fourth to tenth increasing in width, of equal length; tenth about twice as broad as long; eleventh stout, cylindrical, narrowed at apex, nearly twice as long as broad. *Thorax* as wide as the head, slightly transverse; anterior margin a little produced and rounded; anterior angles rounded; sides strongly rounded in anterior third, thence straight to posterior angles, which are obtusely rounded; base straight; puncturation similar to that of head, but closer; ground sculpture similar. *Elytra* together a little broader than long, wider than head and thorax; puncturation as close as that of thorax, but distinctly stronger, with very short, fine, light-coloured hairs; ground sculpture similar. *Abdomen* smooth and shining, with a very few minute punctures on each segment.

Length 11.5 mm.

S. RHODESIA: Bulawayo, 26.ii.1912 (*R. H. R. Stevenson*).

Type (♀, unique) in my collection.

This species can be distinguished from *Z. satelles* Er. and *Z. procax* Pér. by the longer thorax, more finely punctured thorax, more shining head, and more distinct ground sculpture of head and thorax. From *Z. potor* mihi, which it closely resembles, it may be told at a glance by the short antennae with transverse segments. From *Z. okahandjae* Bernh. it may be distinguished by the less shining front of the head, longer and duller and more punctate thorax, and by the closer puncturation of the elytra.

Zyras obex n.sp.

Very shining; head brownish-black; abdomen brownish-black with the apex of each segment brown; thorax brown; elytra brownish, with a large ill-defined testaceous patch at each exterior posterior angle; antennae with the basal four segments testaceous, the rest light reddish-brown; legs testaceous.

Head a little transverse, oval; eyes rather prominent, occupying about half the side; sides slightly rounded, and slightly convergent behind; surface finely and sparingly punctured. *Antennae* moderately long, distinctly thickened at the apex; first three segments about equal; fourth and fifth slender, longer than broad; sixth quadrate; seventh and eighth slightly transverse; ninth strongly transverse; tenth very strongly transverse, twice as broad as long; eleventh stout, a little longer than the two preceding together. *Thorax* a little broader than the head, not strongly transverse; anterior margin feebly rounded; anterior angles rectangularly rounded; sides strongly rounded in the anterior half (but not narrowed), distinctly sinuate and narrowed behind the middle, towards the base straight and nearly parallel; posterior angles strongly rounded; base rounded; surface finely and very sparsely punctured, and scantily pubescent. *Elytra* much wider than the thorax, together about one-third wider than long; the apical margins of the two elytra are strongly produced at the exterior angles, then sinuate, and then conjointly broadly sinuate again at the suture; puncturation a little stronger than on the thorax, but as sparing; pubescence similar. *Abdominal* segments almost smooth. *Legs* long and slender.

Length 6.5 mm.

RHODESIA: Dunbrody, 13.x.1903. Two females.

Type in Rhodesian Museum; paratype in my collection.

Zyras gnarus n.sp.

Reddish-brown; head, last three segments of abdomen and a large triangular scutellary patch on the elytra pitchy black; the dark patch on the elytra covers the whole of the base between the humeri and extends to a point at the apex of the elytra at the suture; antennae with the basal two segments and the apical segment testaceous, the rest pitchy reddish-brown; legs light reddish-testaceous.

Head distinctly transverse; eyes large and prominent, occupying three-quarters of the sides of the head; sides behind eyes straight, strongly convergent; base broad, straight; head smooth in front between the antennae, otherwise strongly and moderately closely punctured. *Antennae* moderately long; third segment as long as the first; second shorter than the third; fourth to tenth decreasing in length, increasing in width; fourth to seventh longer than broad; eighth quadrate; ninth and tenth transverse; eleventh stout, scarcely longer than the two preceding together. *Thorax* much wider than the head, widest in the middle, where the sides are distinctly but very obtusely angled; sides in front slightly rounded, strongly convergent; sides behind straight, less convergent; posterior angles marked, rather obtuse; base flatly rounded, much wider than the anterior margin; surface punctured as on the head, but a little closer, the punctures being irregularly spaced; a transverse depression in the centre at the base, and two small depressions near the sides in the posterior half. *Elytra* broader than and slightly longer than the thorax, a little widened behind, together about half as broad again as long; puncturation a little larger than that of the thorax, as close and regular, rather rugose; a distinct oblique depression runs on the disc of each elytron from near the humeral prominence towards the apical margin, bordering the dark patch. Abdomen rather shining, the puncturation finer and more sparing than that of the elytra on the basal segments and becoming very much finer and closer on the apical segments.

Length 6.5 mm.

Male with a shallow triangular emargination at the apex of the eighth tergite.

Type in Rhodesian Museum: N. RHODESIA, Enon, male; paratype, male, in my collection: RHODESIA, Dunbrody.

In sculpture the species is very like *Z. cicatricosus* Bernh., but very much larger, the elytra are wider, the thorax has three depressions, and the antennal segments are longer. It is near to *Z. taborae* Bernh., but the puncturation is not nearly so strong.

Zyras vesanus n.sp.

Head blackish-brown, shining; thorax and elytra light red-brown, rather dull; elytra infuscate apically; abdomen shining, base and apex light red-brown, 3rd segment dark red-brown, 4th black, 5th black, except at its apical margin; palpi, antennae and legs light red-brown.

Head strongly transverse; front produced; eyes large, prominent, occupying nearly the whole of the sides; posterior angles obtusely rounded; base obliquely straight at each side to the neck, concave in the middle; surface with indistinct micro-puncturation; also with moderate, fairly diffuse, distinct punctures. *Antennae* moderately long; first segment strongly broadened, three times as long as broad; second short, less than one-third the length of the first; third twice as long as the second, a little narrower at base and broader at apex; fourth to tenth wider than the third, about equal in width, fourth a little longer than the rest, all distinctly, but not strongly, transverse; eleventh a little longer than the two preceding together. *Thorax* as wide as the head, broader than long (10 : 7); anterior margin rounded; anterior angles marked, rectangularly rounded; sides straight, converging behind; posterior angles not very obtusely rounded; base feebly rounded; micro-puncturation closer and more distinct than on head; ordinary punctures finer and much closer than on head. *Elytra* a little broader than thorax, together broader than long; micro-sculpture less distinct than on the thorax; punctures as close but stronger. *Abdomen* smooth, with feeble transverse micro-sculpture.

Length 6.5 mm.

Type (♀, unique): CAPE COLONY: Grahamstown, 1.iv.1903; in my collection.

(*To be continued.*)

A new species of Meteorus (Hym., Braconidae) in Bricket Wood, Hertfordshire.—Mr. C. F. W. Muesebeck has described a new species, *Meteorus insignis* (1939, *Proc. ent. Soc. Washington*, **41** : 83), on the basis of four females collected by me in Bricket Wood, Hertfordshire, on June 17th, 1936. The species is quite unlike any previously described in the genus in having a finely longitudinally striate second tergite to the abdomen. Of the thirty-two species of the genus recorded in Britain by T. A. Marshall (1887, *Trans. ent. Soc. London*, **1887** : 87-130) nearly all are parasites of moth caterpillars except for a few which have been bred from beetle larvae.—ROBERT B. BENSON, M.A., British Museum (Natural History), London, S.W.7: *April 28th*, 1939.

Macropterous forms of Acalypta nigrina Fall. and A. marginata Wolff (Hem., Tingidae).—When at Aviemore, Inverness-shire, with Dr. A. M. Massee last August we made a special research for these two little Tingids and found both in small numbers in moss. We each took a macropterous specimen of *A. nigrina* and I was fortunate enough to secure two developed specimens of *A. marginata*. Mr. Philip Harwood and I had previously taken both species in the district, but not the macropterous forms. Saunders (1892, Hemiptera-Heteroptera of the British Islands: 128) gives under the name of *Orthostira macrophthalma* Fieb. only one record for *A. marginata*, namely 'Cheviot, *Hardy*'; its macropterous form has not apparently been previously recorded for Britain. In 1935 I found both species in moss amongst heather on a moor near Aviemore; no specimens could be found there last August, the spot being too dry, but they occurred nearby in an open sunny situation just within a pine wood. Possibly the macropterous forms may be produced to assist migration when existing conditions become unsuitable.—E. C. Bedwell, 54 Brighton Road, Coulsdon, Surrey: *April 19th*, 1939.

The Aculeate Hymenoptera of Hampstead Heath: An Appeal.—The survival of some species of Aculeate Hymenoptera and the disappearance of others from Hampstead Heath and the surrounding district can be traced from the records of such collectors as F. Smith, W. E. Shuckard and F. Enock, through an intermediate period to the present day, representing approximately one hundred and ten years (1830-1939). Mr. K. M. Guichard and I have collected from this area during the past four years and have attempted to gather together all available records of these insects from the Heath and surrounding district, and propose to publish our results as a locality list. We have already received many valuable records from Dr. O. W. Richards, Dr. K. G. Blair and others, and we would be very grateful for any further assistance. We have records for the following years: 1830-1898, 1914, 1917-1919, 1922-1926, 1935-1938, and we would, therefore, most welcome records for the years 1900-1914 and 1926-1935.—Ian H. H. Yarrow, 14 Netherhall Gardens, Hampstead: *March 23rd*, 1939.

Reviews.

'A Key to the British Species of Corixidae (Hemiptera-Heteroptera) with Notes on their Distribution.' By T. T. Macan, M.A., F.R.E.S. Published by the Freshwater Biological Association of the British Empire, Wray Castle, Ambleside, Westmorland, as Scientific Publication No. 1. 27 pp., 8vo, 1939. Price 1/6.

As pointed out by Dr. E. B. Worthington in his foreword (p. 1), there is a lack of readily available literature with which members of the less known groups of British freshwater animals can be easily identified. The F.B.A. has, therefore, decided to publish a series of illustrated pamphlets containing keys and full reference to literature. The present paper is the first of this series. All the species of Corixidae known to occur in Great Britain are included. Special emphasis is given to the distribution of species in the Lake District. The introduction (pp. 2—6) is divided into the following sections: *a*, position of the family; *b*, general remarks; *c*, structure; *d*, killing and preserving; *e*, literature; and *f*, acknowledgments. Then follows the key to subfamilies (p. 6), the key to genera (p. 7), and the key to species (pp. 8—20). In conclusion, there is a section on ecology (pp. 20—25), followed by a list of references.

This useful little work will be welcomed by students and collectors of British Corixidae. The figures, though tending to be rather crude, show quite well the characters used in the classification. It is a pity that those of the palae on p. 18 have been crowded and over-reduced and have not been drawn to the same scale. The classification of the Heteroptera (in the introduction) into Gymnocerata and Cryptocerata, though convenient, is somewhat out of date and does not cover all the known facts. We have noticed the omission from the list of references of several important works on British Corixidae by Douglas and Scott, Buchanan-White, Kirkaldy, etc., and particularly of the fairly recent paper by H. P. Jones, 'An Account of the Hemiptera Heteroptera of Hampshire and the Isle of Wight, with additional notes on British species not recorded for the County (=a synopsis of the British Fauna)'—Corixidae (1930, *Ent. Rec.*, **42** (Suppl.): 70-8, Pl. III (1)).—W. E. China.

'The Macrolepidoptera of the World.' Edited by Dr. A. Seitz. Fauna Palaearctica. Supplement. Vol. IV, Parts 78—83, pp. 169—248, pls. 6, 20, 24—29. Published by A. Kernen, Stuttgart.

In these recently issued parts Mr. L. B. Prout concludes the main account of the Geometridae and commences a section headed 'Additions and Corrections' which brings the text right up to date by incorporating the results of work published while the volume has been passing through the press. No less than twenty-nine pages are devoted to the interesting genus *Eupithecia*, while the eight coloured plates are exceptionally well produced, the browns and yellows being most convincing.

'The House-fly as a Danger to Health, its life-history and how to deal with it.' By Major E. E. Austen, 4th edition revised by J. Smart, London, British Museum (Natural History), Economic Series No. 1, 8vo, 25 pp., 11 figs., 1939. Price 6d.

In this edition the late Major Austen's descriptive account remains practically unaltered, but the section on preventive measures and remedies, has been revised in order to include discoveries made during the nineteen years that have elapsed since publication of the third edition. Additional matter hitherto to be found only in the larger House-fly pamphlet (Economic Series No. 1a) is also incorporated.

Society.

Entomological Club.—A meeting of the Entomological Club was held at 1, 5 and 6 Albany, Piccadilly, London, W.1, on February 20th, 1939, Mr. R. W. Lloyd in the Chair.

Members present in addition to the Chairman: Mr. H. Donisthorpe, Mr. H. Willoughby Ellis, Mr. Jas. E. Collin, Mr. W. Rait-Smith, Dr. Sheffield Neave, Dr. Richard R. Armstrong. Visitors present: Mr. Robert B. Benson, Mr. Francis Hemming, Dr. B. M. Hobby, Dr. Karl Jordan, The Rev. C. E. Tottenham.

The meeting was called for 7 o'clock and dinner was served at 7.30. After dinner the Chairman's works of art and his collections of European butterflies and British beetles were on view; both of the latter are being greatly extended and reorganised. The meeting broke up at a late hour, after a most entertaining evening.—H. Willoughby Ellis, *Hon. Secretary.*

ON VARIOUS NEW OR LITTLE KNOWN BRITISH DIPTERA, INCLUDING SEVERAL SPECIES BRED FROM THE NESTS OF BIRDS AND MAMMALS.

J. E. COLLIN, F.R.E.S., ETC.

It has been my privilege to examine a large amount of material in Diptera, accumulated in recent years by my friend Mr. E. B. Basden in the course of his investigations of the insects to be obtained from the nests of birds and mammals; from some of his earlier material I described three new species in the pages of this Magazine (1933, **69**: 272-5); his subsequent painstaking researches have brought to light other new or little known species, concerning which he has asked me to publish some notes. At the same time I take the opportunity to record the occurrence in this country of certain additional Anthomyidae, though they are not known to have any association with nests.

Mr. Basden will soon publish a full account of his researches, when more detailed particulars of the occurrence of all the species will become available.

PHORIDAE.

Diploneura pilosella Schmitz.

This is one of a small group of closely allied species all of which were included under the old name of *Phora concinna* Mg. (= *Dohrniphora concinna* Mg. of Lundbeck). Father Schmitz has shown that the name *concinna* has no right to be used for any species of this small group, but should be used in place of *crassicornis* Mg. of Verrall's 'List' (1901). He has proved that the old '*concinna*' really represents at least eight species (the *nitidula*-group), of which four appear to occur in this country. This *nitidula*-group is distinguished from the true *concinna*-group by the absence of small anterodorsal bristles to hind tibiae, and the British species may be distinguished as follows:—

1 (2) Halteres yellow. Right side of male hypopygium with a number of hairs and bristles of different lengths; anal tube yellowish at least towards tip .... *D. nitidula* Mg.
2 (1) Halteres dark.
3 (6) Frons not, or only very little, wider than long (at most as 5 : 4).
4 (5) Palpi yellow. A long bristle on left side of male hypopygium and a number of shorter bristles and hairs on right. Front of frons convex, but not markedly produced at middle .... *D. pilosella* Schmtz.
5 (4) Palpi dark. No long bristle on left side of male hypopygium. Front of frons strongly produced at middle .... *D. rostralis* Schmtz.
6 (3) Frons very distinctly wider than long. A long bristle on each side of male hypopygium. Proboscis of female very broad and bulbous about base .... *D. glabra* Schmtz.

D. nitidula Mg. and *pilosella* Schmitz.

These two species are common and widely distributed in Britain. Mr. Basden found a male of the latter species at the entrance to a rabbit's burrow at Burnham (Bucks) on October 6th, 1934.

D. glabra Schmitz.

D. glabra Schmitz is represented in my collection by specimens from Nairn in Scotland, and from Cambridgeshire and Suffolk.

D. rostralis Schmitz.

D. rostralis Schmitz has been bred in numbers from a wasps' nest by Mr. H. Britten, in 1923, from Lancashire; and by Mr. C. J. Wainwright, in 1928, from Warwickshire. I have also seen specimens from Kent, Dorset and Norfolk.

Megaselia septentrionalis Schmitz.

This species belongs to the same section as *rata* Wood and *errata* Wood, in which the female has a distinctly four-bristled scutellum, but in the male the anterior or basal pair of bristles are so small that in this sex the species might easily be thought to belong to the section with only two scutellar bristles. It agrees with Schmitz's description of *septentrionalis* except that the palpi and legs are yellow and not brown, while a female bred from a thrush's nest in 1916 was returned to me by Father Schmitz in 1925 as probably *septentrionalis*. The thorax has a reddish-brown tinge, more especially on humeri and part of pleurae, which tends to lead one astray in using Lundbeck's Table of Species, but antennae are small, supra-antennal bristles large and subequal, two outer bristles of lower frontal row close together (as close as inner from supra-antennal). Scutellar bristles unequal in size even in female. Only two notopleural bristles. Hind femora with long hairs beneath on more than the basal half. Costa not quite extending to middle of wing; section from humeral crossvein to end of first vein rather longer than next two together; costal ciliation moderately long (not so long as in *M. rata*); all thin veins very distinct.

Mr. Basden has bred this species in May from a blackbird's nest taken in Buckinghamshire. My female was from a thrush's nest at Newmarket (Suffolk), and I possess a male from Butley Thicks (Suffolk).

ANTHOMYIDAE.

Hydrotaea basdeni sp.n. ♂ ♀.

A species closely resembling *H. occulta* Mg., but eyes practically bare, and middle tibiae with no long hairs beneath tip in male. Female less easily distinguished.

♂. Head as in *occulta*, but eyes only microscopically pubescent instead of distinctly hairy. Thorax blacker and slightly more shining. Bristles beneath base of front femora longer. Middle tibiae resembling those of *occulta* in having no bristle in front and three strong bristles behind, but there are no long hairs beneath and posteroventrally such as are present in *occulta* on apical two-fifths. Hind femora with a similar double spine near base beneath, but hind tibiae posteroventrally instead of having the small isolated cluster of outstanding fine hairs at rather less than one-third from tip of *occulta*, have 2—3 longer outstanding bristly hairs near middle followed by a rather dense fringe of shorter hairs to the tip; the dorsal bristle also is particularly long and further from tip than in *occulta*. Halteres dark.

♀. Remarkably like *occulta* ♀, but whereas in that species the microscopic hairs on eyes can easily be traced, they are practically absent in *basdeni*. Frontal stripe apparently always reddish (though this may be due to slight immaturity of the bred specimens), ocellar triangle more sharply defined and even more brightly polished than in *occulta*. Thorax, as in male, rather blacker and slightly more shining. There is no apparent difference from *occulta* in the chaetotaxy of legs.

Length about 5 mm.

Described from a long series bred by Mr. E. B. Basden from an owl's nest found near Bix (Oxfordshire) in 1935, the specimens emerging the latter part of May and beginning of June.

The only other British species, in addition to *occulta*, with a double spine *near base* of hind femora in male is *H. nidicola* Mall., also first found in this country by Mr. Basden (1934, *Ent. Mon. Mag.*, **70**: 14), but that has yellow halteres and a bristle in front of middle tibia.

Fannia nidica sp.n. ♂ ♀.

A species closely allied to *F. cothurnata* Lw., with which it is compared below.

♂. Eyes bearing some short scattered hairs. Postocular ciliation all decidedly longer than in *cothurnata*. Abdomen longer haired. Middle legs very similar in structure to those of *cothurnata*, but tibiae with the pubescence beneath apical part becoming longer towards tip, and there are *two* apical spurs in front and two longer ones behind instead of the *one* in each place of *cothurnata*; spur beneath base of first joint of middle tarsi long and slender instead of short and triangular. Hind femora with a few short hairs about middle posteroventrally, but the hairs of the lower row behind, which are moderately long in *cothurnata*, are *very* short and inconspicuous. Fourth sternite elongate-oval, with some bristly hairs on middle area but no strong bristles on actual sidemargins; fifth sternite bearing on each lobe an inner (more marginal) row of about four spines and an outer row of three rather longer spines, the terminal one (near tip of each lobe) longest and strongest. In *cothurnata* the fourth sternite is wider at tip than at base, with straighter sides, along each of which four long bristles are equally spaced; the fifth sternite has an inner (hindmarginal) row of 6—7 very much smaller bristles, the five spines of outer row are shorter, more equal in length and placed closer together than those in *nidica*. The male genitalia of the two species are also very different, as can be seen in the figures (Figs. 1 and 2).

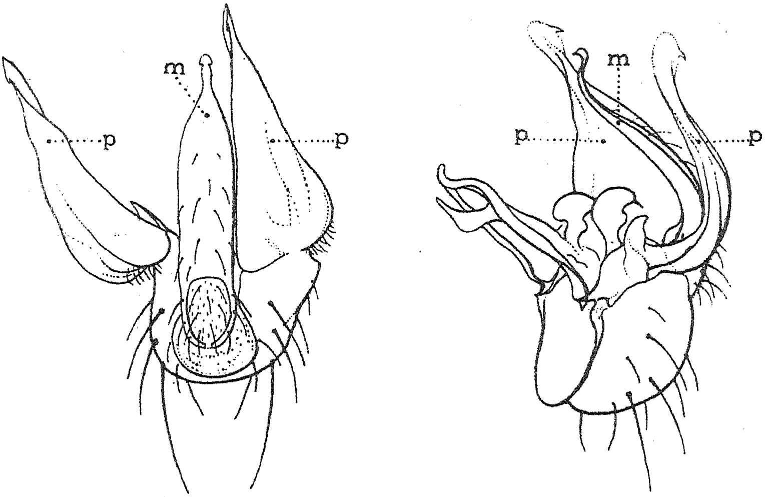


Fig. 1.—*Fannia nidica* sp.n. Male hypopygium from below and in profile. 'm'= mesolobe. 'p'= paralobe.

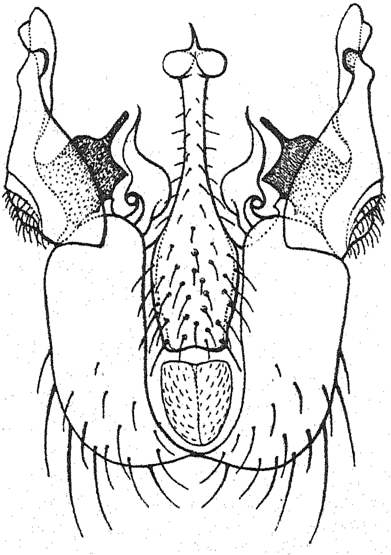


Fig. 2.—*F. cothurnata* Lw. Male hypopygium.

♀. The females bred by Mr. Basden would run down by Stein's table to *F. serena* Fln. (the frontal orbits being somewhat shining), but are at once distinguished by the presence of more than one bristle both in front and behind middle tibiae.

Length about 5 mm.

I bred a male on April 26th, 1929, from an old bird's nest taken from a hedge at Dullingham Ley (Cambs.). Mr. Basden has bred both sexes from a song-thrush's nest taken in Buckinghamshire, as well as from an artificial 'decoy' nest put down in the same county.

Ringdahl has recently (1934, *Ent. Tidskr.*, **55**: 117) described a *F. nodulosa* which is evidently allied to *F. cothurnata* and *nidica*, but appears to differ in chaetotaxy of legs and certainly has different male genitalia.

There is a group of species in the genus *Fannia* having dark legs (at most only the knee and base of tibiae yellowish) and yellow markings on the male abdomen, or if no such yellow markings, then thorax with darker median stripe and hairs beneath middle tibiae short for whole length, which includes the very common and well-known *F. canicularis* L. The other British species of this group having yellow markings on abdomen are *F. difficilis* Stein described in 1895, and *F. speciosa* Villen. described in 1898. To these I now add a fourth — *F. clara* sp.n. The identification of these four species requires some care, as, in a general way, they are very much alike. So far as the males are concerned the chief points of difference may be tabulated as follows :—

1 (2) Pubescence beneath middle tibiae extremely short, not longer than one-third width of tibia at its widest part. Middle femora with bristles in the rows beneath less numerous and not so dense. Hind femora beneath about base, and posteroventrally, with only a few short bristly hairs; not with more numerous, finer hairs extending nearly whole length beneath, nor with still more numerous and very short hairs and bristles .... *canicularis* L.

2 (1) Pubescence beneath middle tibiae longer, quite half width of tibia at widest part. Middle femora with bristles beneath more numerous, in denser rows. Hind femora beneath and posteroventrally with numerous soft, fine hairs, or (*clara*) with more numerous and shorter hairs and bristles.

3 (4) Abdomen with a dark middle stripe on second and third segments, which may be faint on second segment and does not widen out triangularly on hindmargins of either. Only 6—7 pairs of frontal bristles in addition to the rather stronger upper pair in front of ocellar triangle. Hind femora with fine hairs beneath and posteroventrally. Middle femora with bristles in the row *behind* shorter and less outstanding (except for 5—6 towards tip) than in either of next two species. .... *speciosa* Villen.

4 (3) Abdomen with dark triangular markings on second and third segments.

5 (6) Posteroventral pubescence to hind femora very short and dense (not long and hairlike), and both antero- and posteroventral pubescence to middle femora shorter and denser .... *clara* sp.n.

6 (5) Hind femora ventrally about base and posteroventrally with fine hairs as in *speciosa*. Middle femora with less numerous and longer bristles and hairs antero- and posteroventraly. The bristles in the row *behind* middle femora longer and more outstanding than in *speciosa*. Hypopygium more hairy .... *difficilis* Stein.

Fannia clara sp.n. ♂.

A species resembling *F. difficilis* Stein, differing chiefly in armature of middle and hind legs.

♂. Middle femora with anteroventral bristles shorter on basal half than in *difficilis*, denser (at least biserial) on outer half; posteroventrally also with less difference in length between those near base and near tip, and all much denser (more than quadriserial). Hind femora with more numerous and quite short bristles or bristly hairs beneath and posteroventrally, in the place of the longer fine hairs of *difficilis*; three or four of the anteroventral bristles a little distance from tip are stronger, but not longer, than the corresponding bristles in *difficilis*, but the rest of the anteroventral row is hidden in the general vestiture. Apparently only one anteroventral bristle to hind tibiae. In other respects, including the yellow second to fourth abdominal segments, with black median triangle widening out on each hindmargin (most extensive on fourth segment), very much like *F. difficilis*. This latter species in the six specimens examined by me has a few tiny hairs on the flattened prothoracic area below the hairy humerus and anteroventral of the spiracle. These hairs are absent in *F. clara*.

Length about 5.5 mm.

Described from a male bred on July 19th, 1934, by Mr. Basden from the nest of a 'little owl' found at Cookham (Berks). There is a second (headless) male in Dr. Wood's collection from Shobden Marsh (Hereford) taken on August 3rd, 1904.

I take this opportunity to record the occurrence of the following ten species of *Fannia* in this country.

F. vespertilionis Ringdahl.

On August 16th, 1934, I captured near Pont Newydd (Brecknockshire) a female *Fannia* with mainly yellow legs and entirely yellowish abdomen which I could not identify with any known species. Later, I discovered that my friend Mr. C. J. Wainwright had taken a similar female ten days previously at Moccas Park (Hereford). In 1935 I received a copy of a paper (1934, *Ent. Tidskr.*, **55**: 7) from Mr. O. Ringdahl in which he described in both sexes a new *Fannia* from Sweden as *vespertilionis*, to which my female appeared to belong, and Mr. Ringdahl after having seen my specimen confirmed the identification. *F. vespertilionis* belongs to the *canicularis*-group, differing, for instance, from the somewhat similar *pretiosa* Schin. and *ornata* Mg. in having hairs *behind* the hind coxae, and very short dense pubescence beneath the whole length of middle tibiae. The male is described by Ringdahl as having frons somewhat wider than third antennal joint. Abdomen (including hypopygium) entirely yellow, thinly dusted whitish, with somewhat darker yellow dorsal markings. Hind legs yellow with a brown mark at tip of femora, and blackish base to tibiae, middle legs rather more extensively, and front legs entirely, dark. Chaetotaxy of legs apparently not unlike that of *canicularis*.

F. pubescens Stein.

The common *F. canicularis* L. is certainly variable in several characters, but in the typical form found in houses the thorax is grey or brownish-grey with at least some indication of a median darker brown stripe, and often three such stripes down lines of bristles. There is, however, a much darker form to be found out-of-doors, which I believe is the *F. pubescens* of Stein, in which the thorax is almost black and rather more shining and the abdomen usually without any yellow coloration. I have taken such specimens in my garden here at Newmarket (Suffolk), and there is a specimen in the British Museum collections from Newquay (Cornwall). The chaetotaxy of the legs is practically indistinguishable from that of typical *canicularis*, of which it may possibly be only an extreme variety.

F. ornata Meigen.

This has the *canicularis* type of yellow markings on abdomen, but the legs (except tarsi) are yellow and with very distinctive chaetotaxy in the male; for instance, the front tibiae have a long posteroventral bristle a short distance before tip; middle femora 3-5 long stout spinose anteroventral bristles; middle tibiae bent and irregular in thickness with near middle beneath a dense series of short bristles followed by a fringe of long hairs to tip, where there is a long apical bristle; hind tibiae on apical quarter with remarkably long curved antero- and postero-ventral bristly hairs.

This species was first taken by the late Mr. F. Jenkinson of Cambridge at Logie (Elginshire) in September, 1904. I caught a male at the Bridge of Brown, on the road from Nethy Bridge to Tomintoul, in August, 1935, and Mr. C. J. Wainwright has taken it in the Midlands.

F. hirticeps Stein.

This species is allied to *F. cothurnata* and *nidica*, but has much more conspicuously hairy eyes. Postocular ciliation in male short as in *cothurnata*, but spur at base of middle metatarsus slender as in *nidica*. The hind femora are most distinctive, being slender and somewhat arched (concave beneath) with a row of *very* long strong bristles anteroventrally, and a rather similar row behind, while beneath there are scattered short hairs.

The female is extremely like the female of *nidica*, but my single specimen differs in having the small hairs outside the lower (incurved) frontal bristles more numerous and more than uniserial; jowls below eyes narrower and even when viewed from below not wider than width of third antennal joint. Also, in addition to the pre-alar bristle of *nidica*, there is a second much smaller one behind it, between it and the supra-alar, while the hind tibiae have two distinct anteroventral bristles instead of usually only one in *nidica*.

I can record this species from Scotland (Nethy Bridge), where I captured a male on June 1st, and what I believe to be the female at Aviemore on May 27th, 1934.

F. tuberculata Stein.

This species may be distinguished in the male sex by the small, rounded, laterally compressed tubercle beneath the middle tibiae just before the middle, followed to the tip by somewhat dense fine hairs almost as long as tibia is wide, and by the long posteroventral bristles and hairs (more than biserial) on apical third of hind femora, though not extending to tip.

I first caught a male of this species at Aviemore (Inverness) at the end of May, 1913, and two more at Grantown and Glen Feshie (Inverness) at the end of May and beginning of June, 1934. On August 22nd, 1936, however, I took a fourth male in Norfolk (Horning Ferry).

F. norvegica Ringdahl.

This species, which was described by Ringdahl in 1934 (*Konowia*, **13**: 98), is very much like *F. carbonaria* Mg. (*corvina* Verr.), but may be at once distinguished in the male by the numerous long fine hairs present on the hind femora behind and posteroventrally.

I caught a male on June 23rd, 1937, on the Inverness-shire side of the River Spey at Grantown, where nearly all my collecting at that locality has been done.

Fannia immutica sp.n ♂ ♀.

♂. Very similar to *F. mutica* Ztt., but larger and not so black, differing chiefly in the much more conspicuous ciliation on nearly whole length of posterior side of hind tibia of male; these hairs are quite twice as long as tibia is wide

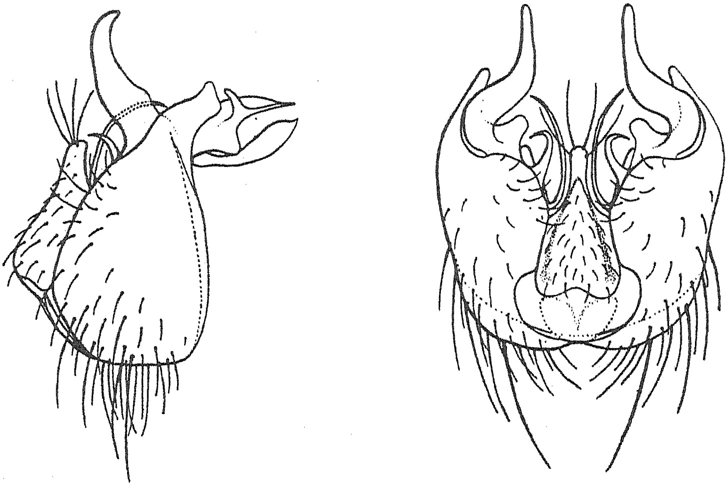


Fig. 3.—*F. immutica* sp.n. Male hypopygium in profile and from below.

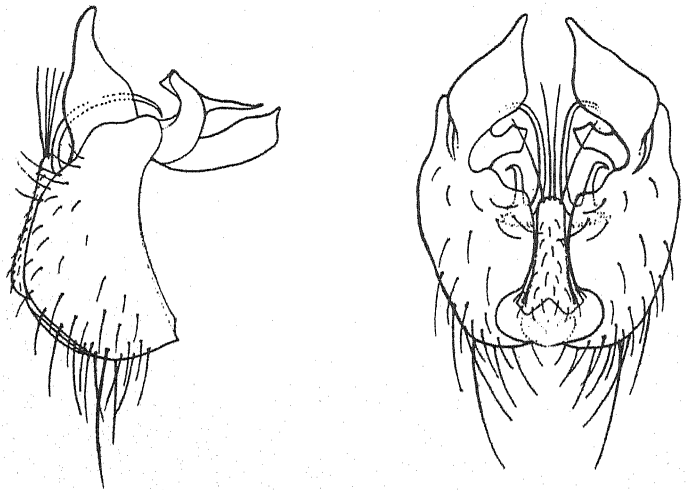


Fig. 4.—*F. mutica* Ztt. Male hypopygium in profile and from below.

and the ciliation is apparently double, with longer hairs above, very much longer than those of anterodorsal row. There are also marked differences in the male genitalia as shown in the figures, the much more slender side lamellae being even more noticeable when viewed from below (Figs. 3 and 4).

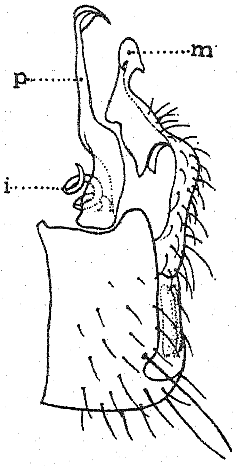
♀. Differing from *mutica* female in having no bristle beneath middle tibiae. There are two distinct though short prealar bristles. Hind tibiae with antero-dorsal ciliation, but none behind. Hind coxae with bristles behind as in male and thoracal squamae large.

Length about 6 mm.

Described from five males and one female bred by the late Mr. A. E. J. Carter in June, 1906, 'from fungus' collected at Musselburgh, near Edinburgh, and another male taken by me at Grantown (Inverness-shire) on July 9th, 1938.

Fannia umbrosa Ringdahl (1934) *nec* Stein = **F. ringdahlana** n.n.

F. umbrosa was originally described by Stein in 1895 from two males in Kowarz's collection incorrectly labelled '*cothurnata* Lw. sec. typ.' taken at Herculesbad in June, 1871, and from specimens sent to him by Mr. Verrall. In his description Stein wrote: 'Die die Stirnstrieme einfassenden Borsten hören schon ziemlich weit vor dem Ocellendreieck auf,' and gave the halteres as 'braünlich-gelb.' I find in Kowarz's collection one of the male types mentioned by Stein, and another captured at Marienbad in June, 1869. These agree perfectly with the specimens of *umbrosa* in Verrall's collection and are undoubtedly the same as those described by Ringdahl in 1934 as *subumbrosa* n.sp.



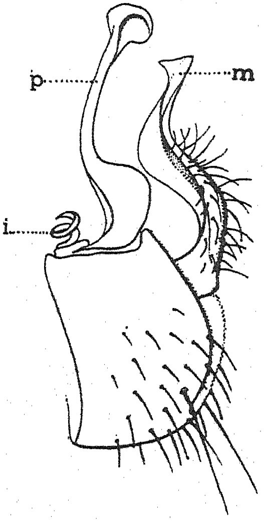


Fig. 5.—*F. umbrosa* Stein. Male hypopygium without sternite.
„ 6.—*F. ringdahlana* n.n. Male hypopygium without sternite.
'm'= mesolobe. 'p'= paralobe. 'i'= internal process.

On April 21st of last year, when collecting in Wales at Ganllwyd near Dolgelly, I captured several specimens of a species closely allied to Stein's *umbrosa*, but slightly larger, with frontal bristles extending up to ocellar triangle, and squamae and halteres very dark, which were obviously *F. umbrosa* Ringd. *nec* Stein, 1895. A comparison of the male genitalia of this species and true *umbrosa* (figs. 5 and 6) with figures given by Ringdahl (1934, *Ent. Tidskr.*, **55**: 107), confirms my identifications. *Fannia subumbrosa* Ringd., therefore, sinks as a synonym of *umbrosa* Stein, and *F. umbrosa* Ringd. *nec* Stein requires a new name, which I propose shall be *F. ringdahlana*.

It is probable that Ringdahl was misled by the fact that Stein (Die Anthomyiden Europas, 1915 (1916), *Arch. Naturgesch.*, **81a** (10): 75) used characters for '*umbrosa*' in his Table of Species of *Fannia* which are those of *ringdahlana* and not those of his original *umbrosa*. There can be no doubt, however, as to which species was originally described as *umbrosa*.

There are small but obvious differences in the chaetotaxy of the hind femora in the males of these two species: *umbrosa* has only one* anteroventral bristle near tip, and a longer row of 10-14 posteroventral bristles on apical third, those more distant from tip usually biserial; *ringdahlana* has two anteroventrals and the posteroventral row is composed of 7-9 longer bristles, those more distant from tip being placed rather higher up on the posterior side of femora than the apical ones and not biserial. The female of *F. ringdahlana* is at present unknown.

Fannia umbratica sp.n. ♂.

Agreeing with *umbrosa* Stein (and differing from *ringdahlana*) in having fewer frontal bristles (7-9 pairs), which do not extend up to ocellar triangle, and in usually having only one anteroventral bristle near tip of hind femora, but differing from both in structure of male genitalia.

♂. Hindmost pair of frontal bristles about as far in front of ocellar triangle as that triangle is long. Thorax black with a slight brownish tinge in some positions, causing it to appear dull. Acrostichals biserial, prealar bristle short but distinct. Squamae brownish, thoracal about as large as alar. Halteres with darkened knobs. Legs black, with only front knees obscurely yellowish, chaetotaxy very much as in *umbrosa*, but bristles of posteroventral row to middle femora rather longer, those of posteroventral row towards tip of hind femora more resembling the arrangement in *ringdahlana* than in *umbrosa*, i.e. they are less numerous (only 5—6 longer ones), become shorter, not biserial, and more posterior than posteroventral as they approach towards middle of femur. No bristles behind hind coxae.

---

* There is a mistake in Ringdahl's 'Table of Species' where he gives *subumbrosa* (= *umbrosa* Stein) as having two anteroventrals to hind femora, and *umbrosa* (= *ringdahlana*) as having only one.

Genitalia with paralobes (or side lamellae) (Fig. 7, ' p ') yellowish and semitransparent, stouter on apical half than in either *umbrosa* or *ringdahlana,* while the long, slender, curved internal processes (' i ') are remarkably different from the short, squat, corkscrew-like spirals of the other two species.

Length about 4 mm.

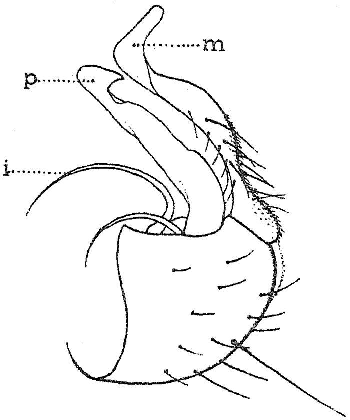


FIG. 7.—*F. umbratica* sp.n. Male hypopygium without sternite.
' m '= mesolobe. ' p '= paralobe. ' i '= internal process.

Described from a male taken at Aviemore (Inverness-shire) on May 26th, 1934. There are two more males in Mr. Colbran J. Wainwright's collection, also taken in Scotland.

F. atripes Stein.

This species described in 1916 (1915, *Arch. Naturgesch.,* **81a** (10): 79) belongs to the group having in the male a single stout spine on front coxae near tip beneath, a spine with recurved tip on middle coxae, but no stout spine on sternopleura; it is allied to *F. ciliata* Stein, *manicata* Mg. and *monilis* Hal. The males of the last two are easily distinguished by the dense fan-like cluster of bristles at end of front tibiae, and of *ciliata* by the numerous very long bristly hairs in front of hind tibiae. The discovery of this species in Britain was made by my friend Mr. Colbran J. Wainwright, who caught a single male in Perthshire in July, 1937, while early in July of last year I took a number of specimens, including one female, near Bettyhill (Sutherland). The identification of this species as *F. atripes* Stein appears to be certain in spite of the fact that Stein described the hind femora as bare posteroventrally, whereas in my specimens hairs in a row on the posteroventral surface are almost as long about the base as those anteroventrally, become shorter about middle, and practically disappear about one-third from tip. The female, having the thoracal squamae well developed, runs down in Stein's 'Table' (1914 (1913), *Arch. Naturgesch.*, **79a** (8): 24) to *monilis* Hal., from which it is at once distinguished by its entirely black legs, while the acrosticals are (at least about middle of thorax) more than triserial.

Melinia cannabina Stein.

When once the association of this species with the genus *Melinia* is recognised, it is easily separated from the other two British species, *M. pullula* Ztt. and *M. karli* Ringd., by its practically bare arista, these other two species having the arista distinctly pubescent, while *pullula* has the cross-veins infuscated. *Melinia* Ringd. is one of those genera into which the old genus *Chortophila*, and those species of *Hylemyia* with only pubescent (not plumose) arista, have been reshuffled; it is one of the genera in which the species have *two* spurs to the hind tibiae (a posteroventral as well as the usual anteroventral), and the costa hairy beneath. The sternopleural bristles are arranged 2 : 2, and the abdomen is not tubular but somewhat dorso-ventrally flattened.

M. cannabina was originally described from specimens bred from a bird's nest, and has been freely bred by Mr. Basden from the nests of various birds.

Opsolasia eriophthalma Ztt.

The species of this genus were dealt with by Kowarz in 1800 under the generic name of *Lasiops*, and I possess his specimens. A study of them has convinced me that his *ctenocnema* is a dark form of *roederi*; his *meadei*, *parviceps* and *adelpha* are all one species, while his *anthomyina* Rdi. is a grey form of his *eriophthalma* Ztt. This reduces the number of his species to three, all of which occur in Britain. Two of them (*meadei* Kow. and *eriophthalma* Ztt.) have been bred, both by myself and Mr. Basden, from the nests of various birds.

Considerable confusion has been caused by misidentifications of Kowarz's species. Stein appears to have correctly identified *roederi*, but his *ctenocnema* is the *eriophthalma* Ztt. of Kowarz and his *eriophthalma* is *meadei* Kow. (as has been recognised by Karl). Ringdahl has followed Stein in the use of the name *ctenocnema*, but for *roedei* Kow. he uses the name *eriophthalma* Ztt. He does not appear to have justified this use of *eriophthalma* by an examination of the type—a single male captured by Holmgren at

Tärna in July, 1856—and until this is done I consider it wiser to follow Kowarz's interpretation of Zetterstedt's species.

Opsolasia octoguttata Ztt.

In spite of its only microscopically pubescent eyes, this species possesses more of the characters of *Opsolasia* than of *Delia*. An agreement in the development of the lower posthumeral bristle (making three bristles between humeri and thoracic suture, excluding the notopleurals), coupled with the large number of anterodorsal bristles to hind tibiae (6-8) as well as three posterodorsals, and certain characters in the male genitalia, appear to be of greater significance than the absence of distinct hairs on the eyes. The male genitalia of *octoguttata* Ztt. are very similar to those of *roederi* Kow. It is also probable that the species described by Karl as *Chortophila laricicola* and by Czerny as *Chortophila anthracina* are similarly allied to *O. eriophthalma* (Ztt.) Kow. *O. octoguttata* Ztt. is smaller and greyer than either of these last two, and usually possesses only one anteroventral bristle to hind tibiae. It is another of the species which both Mr. Basden and myself have bred from birds' nests.

Nupedia latipalpis Stein.

This species, which was described from N. American specimens, has been somewhat doubtfully recognized by Ringdahl as occurring in Sweden, and if my species is the same, it is common in Scotland, and has been found in Sussex, Devon, Notts, Worcestershire, and Cambs, and been bred by Mr. Basden.

Nupedia Karl is a genus with the species long known as *Chortophila* (or *Phorbia*) *dissecta* Mg. as type. There are four British species if the genus be limited to those resembling *dissecta* in having epistoma not projecting, no anteroventral bristles to middle tibiae, and hind tibiae with only two pairs of dorsal bristles. The males may be distinguished as follows:—

1 (4) Upper occipital bristles in more than one row. Arista practically bare. Palpi less dilated.

2 (3) Thorax, viewed from behind, almost uniformly dark, not striped. Posteroventral bristles to hind femora very inconspicuous, usually only one longer one near base and one near middle. Side lamellae (paralobes) of genitalia with a deep indentation at tip .... *dissecta* Mg.

3 (2) Thorax, viewed from behind, with distinct dark (narrower median and wider side) stripes on a greyer ground—at least in front of suture. Side lamellae (or paralobes) of genitalia simple in outline, their exterior surface clothed with tiny outstanding bristles .... *debilis* Stein.

4 (1) Only a single row of upper occipital bristles. Arista distinctly pubescent, the hairs longer (both above and below) than arista is stout at base. Palpi stouter, very much dilated in female.

5 (6) Costa hairy beneath. Mesolobe of genitalia ending in a bare two-pronged tip; paralobes (or side lamellae) of simple outline .... *latipalpis* Lw.

6 (5) Costa bare beneath. Mesolobe with simple hairy tip; paralobes indented at tip, not unlike those of *dissecta*. The shorter bristles on front of humerus coarser (more spinose), in both sexes, than in any other species .... *patellans* Pand.

There is a fifth species, *N. pseudodissecta* Ringd., which might be found in Scotland; it is a dark species like *dissecta*, but may be distinguished by the much more numerous posteroventral bristles to hind femora, especially towards base. A Swedish specimen seen by me also has the second joint of arista longer—more than twice as long as broad.

N. dissecta Mg. is very common everywhere. *N. debilis* was not uncommon at Bewdley (Worcestershire) in September, 1892, when Mr. Verall took it in some numbers, and was common near Dolgelley (Merioneth) in April last; it has also been taken in Scotland. *N. patellans* was described by Pandellé as a *Hydrophoria*, a genus from which he excluded species with a plumose arista, but his notice in *patellans* of large palpi, single-rowed occipital bristles, and only two anterodorsal bristles to hind tibiae, all point to either the species I have called *patellans* or *latipalpis* Stein, and as the former has more distinctly yellow front knees, a character mentioned by Pandellé for *patellans*, this would appear to be the correct choice. I have, so far, only found this species in Scotland in July; it seems to occur rather later than *latipalpis*.

HELOMYZIDAE.

Leria (Heleomyza) brachypterna Lw.

This is a species resembling *L. serrata* L., but has more than one strong sternopleural bristle and the first joint of hind tarsi in the male shorter, and in female not longer, than the next joint. I have seen specimens bred from the nest of a brown owl taken by Mr. H. Morrey Salmon near Cardiff, from the débris of an owl's nest in a hollow willow tree at Wicken (Cambs.), Mr. Basden has bred it from the nests of kestrels and carrion crows, and Mr. Wallace Pugh of Oswestry from a rook's nest. I also possess specimens from Scotland, and have taken it on the windows of my house at Newmarket (Suffolk).

Czerny has used the generic name *Helomyza* for this group of species, but the type of *Helomyza* (1820) is *rufa* (Pnz.) Fln. = *flava* Mg. by designation of Westwood (1840) and Rondani (1856), while *serrata* L., with which *brachypterna* is congeneric, is the type of a genus *Heleomyza* (1810). The present Rules appear to allow these to be considered as two distinct genera, and this would seem to be the best way out of the muddle, but until the matter has been authoritatively dealt with I retain the name *Leria*.

Ornitholeria nidicola Frey.

This species, originally bred from a starling's nest in the neighbourhood of Helsingfors, has been bred by Mr. Basden from the nest of a barn owl from Bix (Oxon). Mr. Basden's specimens are a little darker than described by Frey, the third antennal joint is mainly brownish, the legs hardly 'einfarbig gelb,' there are two postalar bristles, not one (indeed 'one' would be an unusual number in this family), and the preapicals are hardly 'deutlich' on front and hind tibiae—more especially in male. They must nevertheless be the same species because of their general agreement with Frey's description, their very small size (about 1·5 mm.), and tiny costal bristles. The small bristles along sides of mouth-opening are in one row only in both sexes. There is certainly more than one spur to middle tibiae; I find two beneath (posteroventral one shorter), one short one (about as long as preapical) in front, and another very small one close below it; they are rather different in female, the posteroventral one being very small. Male hypopygium quite small, neither this nor prehypopygial segment half as wide as fifth segment; prehypopygial segment with bristles mainly on right half. Female abdomen of normal *Leria* type. Cross-veins of wing not much more than length of outer one apart.

The female from Lapland doubtfully referred to this species by Czerny (1932, *Konowia*, **11**: 211) is certainly different from Basden's species owing to the shorter anterior orbital bristle and the possession of mesopleural bristles; there is also only one distinct spur to middle tibiae, with two tiny ones in front and two still smaller ones behind. Czerny overlooked the small preapical bristle to middle tibia (it is present on one tibia and has been broken off the other). Other characters found in this female are: 1 or 2 + 3 dorsocentrals, all quite strong except for the most anterior of all, the stronger front one only very slightly in front of line connecting presuturals. Jowls not very deep with small bristles in two rows along mouth-edge. In addition to a strong prothoracic bristle, there is (as in *nidicola*) a small stigmatical bristle pointing more forwards. Abdomen with quite long hind-marginal bristles to tergites, and sixth segment very little narrower than fifth, wide open at end, with the smaller seventh withdrawn inside; even this latter has long hind-marginal bristles and is wide open at end.

Cross-veins of wing nearly twice length of outer one apart, a distance not equal to last section of discal vein.

CHLOROPIDAE.

Elachiptera uniseta sp.n. ♂ ♀.

Resembling *E. bimaculata* Lw., but with only one pair of orbital bristles. *E. bimaculata* is a species found in the Mediterranean region and the Canary Isles, distinguished by its yellow thorax marked with two lateral dark patches or stripes, but the thoracic markings are said to vary, with sometimes three or even four dark stripes or partial stripes. Duda in redescribing the species in 1932 (Lindner's 'Die Fliegen') states that it has two pairs of longer orbital bristles; this is usual in all species of this genus and is the case in a specimen I possess of *bimaculata* from the Canary Isles (the type of *E. bilineata* Bigot). The five British specimens (3 ♂ ♂, 2 ♀ ♀) bred in July, 1933, by Mr. Basden from the nest of a reed bunting taken at Black Park, Buckinghamshire, all have only one strong orbital, though they otherwise answer very well to the description of *bimaculata*. As the number of orbital bristles is undoubtedly an important character in this subfamily of Chloropidae, it seems necessary to describe this British form of *bimaculata* as a distinct species.

♂. Head yellow with a large shining yellow frontal triangle extending almost to front of frons. Outer vertical bristle long, inner (incurved) vertical very small. Vibrissa and single row of hairs along mouth edge pale yellow. Thorax yellow with an oval, shining blackish patch each side, extending from behind suture to the single strong dorsocentral bristle, sometimes indications of a small dark spot in front of this patch on other side of suture; rest of disc sparingly dusted greyish, this dusting on a broad median yellow band giving it a slightly roughened appearance; pubescence very short and pale; prothoracic collar and extreme front of thorax black, as is also front of sternopleura, and whole hinder part of pleura extending upwards on to basal sides of scutellum, the part below scutellum shining black. Scutellum longer than broad, with two large apical and two smaller lateral projections each with a bristle at tip. Abdomen more tawny-brown, blacker at sides and yellower about middle of the long second tergite; pubescence pale. Legs all yellow. Wings clear with yellow veins.

Length about 1.75 mm.

Mimogaurax niger Czerny.

This interesting species was bred by Mr. Basden from the nest of a dormouse taken at Bradfield (Berks). It is small and shining black, with the black head much deeper in profile than long, and mainly occupied by the eye; bristles long for this subfamily, inner and outer vertical bristles equally developed, and four strong orbitals on each side. Antennae with basal joints yellowish, third rounded, rather large and almost black, with an obviously pubescent arista. Thoracic disc shining black, rather densely clothed with short upstanding yellowish-white hairs; scutellum slightly dusted with pale hairs on disc longer than on thorax, and four long yellowish marginal bristles, the apical pair longest. In the female the pubescence on thorax and scutellum is darker, and scutellar bristles black. Abdomen slightly dusted and with very conspicuous, but darker, pubescence on last three segments. Legs pale yellow with a dark streak above at least on hind femora towards tip, and in male with some indications of a dark band on basal half of hind tibiae. Halteres with dark knob and yellow base to stem.

D. G. Hall has pointed out (1937, *J. Wash. Acad. Sci.*, **27**: 257) that *Pseudogaurax* Duda (1930) is preoccupied by *Pseudogaurax* Malloch (1915) and has renamed Duda's genus *Mimogaurax*.

Botanobia fascipes Becker.

This genus is another subdivision of the genus *Gaurax*, and is obviously closely allied to *Mimogaurax* (=*Pseudogaurax*), having the same development of vertical and orbital bristles, rounded third antennal joint, and pubescent arista; the head, however, is squarer in profile with eyes more rounded, and there may be five orbitals. Neither this genus nor *Mimogaurax* have the very long straight radial vein of *Dicraeus*.

B. fascipes has been bred by Mr. Basden from nests of a blackbird and linnet taken at Farnham Royal (Bucks); it has also occurred in some numbers on the windows of my house here at Newmarket (Suffolk). Duda does not recognise *fascipes* Beck. as distinct from *dubia* Mcq. (*ephippium* Ztt.), but I possess the latter species from the New Forest (Hants) and feel convinced of its distinctness. Both are small, mainly yellow species with disc of thorax shining black except at sides, behind, and on scutellum. *B. fascipes* has only one pleural dark spot or streak (on mesopleura), and a narrow dark band at base of hind tibiae; in *B. dubia* there are additional dark pleural spots on sterno-, ptero- and hypopleura, while hind tibiae are entirely yellow. In addition, *dubia* has frontal triangle faintly dusted, thoracic pubescence rather longer, and crossvein closing discal cell more upright.

Discogastrella germanica Duda.

This species is considered by Duda to be the only palaearctic representative of Enderlein's genus *Discogastrella*. It is very much like *Conioscinella frontella* Fln., previously listed under the generic name *Oscinis* or *Oscinella*, but has the head seen from in front much wider than deep, a somewhat longer, coarsely punctate, scutellum, with marginal bristles arising from minute warts; there are six of these bristles, the apical pair long, lateral ones quite short, while basal pair are at about middle of sidemargins. *C. frontella* has a smooth scutellum with four marginal bristles which do not arise from warts. Further comparison with *frontella* shows that *germanica* has a rather larger though similarly dusted frontal triangle, rest of frons more extensively yellow, palpi smaller, thorax rather more punctate and with paler (yellowish-brown) hairs and bristles. Legs yellow, more tawny yellow on femora (especially hind pair) and even darker on middle part of hind tibiae.

This species was not uncommon in Darnaway Forest (Elginshire) in June, 1934, Dr. Wood found it in Herefordshire, and I have a specimen from Cornwall. Mr. Basden found it alive in one of his artificial decoy nests.

Oscinella posticata sp.n. ♂ ♀.

The genus *Oscinella* is now restricted to the *frit*-group of small black species with shining frontal triangle, and vibrissal angle rounded in profile and not more prominent than front margin of eyes.

O. posticata resembles *O. trigonella** Duda in having thorax brightly shining, but whereas in *trigonella* the whole disc is shining, in *posticata* there is a dusted area of some size in front of scutellum and in notopleural depression. Antennae with noticeably larger, more rounded, third joint; arista more obviously pubescent; frontal triangle smaller, not extending to three-quarters length of frons. Legs with knees narrowly (including extreme tip of at least four anterior femora) yellowish; tip of tibiae and most of tarsi yellowish, front tibiae usually paler than others. Wings longer.

Length about 1—1.25 mm.

Numerous specimens of this species were bred by Mr. Basden in June, 1934, from a mole's nest taken near Beaconsfield (Bucks). In addition, I possess one specimen from Bournemouth (Hants) taken by Col. Yerbury on July 7th, 1902.

Duda has caused a lot of unnecessary confusion by using the generic name *Oscinis* for a section of the genus *Chlorops*. He accepted Rondani's (1856) fixation of *laeta* Mg. as genotype of *Chlorops*, overlooking the fact that Westwood (1840) had already cited *pumilionis* L.—a species originally included in *Chlorops* by Meigen in the synonymy of *C. lineata* F. As this same species (*lineata*) is the genotype of *Oscinis*, this later generic name of *Oscinis* becomes a synonym of the earlier *Chlorops*. Also Duda's character for the subdivision of the genus *Chlorops* does not hold good in all specimens.

---

* *O. trigonella* Duda is the *Oscinis nitidissima* (Mg.) Beck. of Verrall's 'List' (1901).

EPHYDRIDAE.

Hydrellia tenebricosa sp.n. ♂.

A uniformly dull, very dark grey (or greyish-black) species, with black palpi.

♂. Frons and face with black reflections. Antennae black, arista with only five plumes. Jowls below lowest point of eye almost one-third height of eye. Thorax with a pair of strong presutural dorsocentrals, almost as long as postsutural pair, and about as distant from them as from each other. Pleurae similar in colour to rest of thorax. Abdomen not quite so dull as thorax, the so-called fourth (last long) segment no longer than previous one. Hypopygium small. Legs entirely dark, middle tibiae conspicuously dilated. Wings with the second costal segment not quite so long as next two together. Knobs of halteres pale yellow.

Length 1.75 mm.

This species is very distinct from any of the section with black palpi at present described. *H. argyrogenis* Beck., with which it has some characters in common, has still wider jowls, while the face, pleurae and sides of abdomen are almost silvery grey.

Described from a male bred by Mr. Basden on June 2nd, 1934, from the nest of a coot found at Black Park (Bucks).

CARNIDAE.

Carnus hemapterus Nitsche.

This interesting genus is closely related to *Meoneura* Rdi., but easily distinguished, when the wings are present, by the absence of the outer crossvein closing discal cell, but apparently the wings are quickly broken off soon after emergence from the puparium; in such specimens the much wider facial keel, which has an impressed middle line making it V-shaped in section, the absence (or microscopic size) of postvertical bristles* (a pair close together immediately behind ocellar triangle), and the densely haired or bristled side membrane of abdomen (more evident when abdomen is distended, as in mature insects which have fed and are preserved in spirit), will serve to distinguish the genus. The legs are also stronger and there are less numerous hairs on thoracic disc than in *Meoneura*.

The British specimens, of which I have examined a large number, are shining black, with (even in immature specimens) only a very slight tendency to a brownish colour; second antennal joint, trochanters and tarsi, yellowish; tibiae also pale at both ends, front tibiae often almost entirely yellow. They were all bred by Mr. Basden from birds' nests (starling, barn owl, hedge-sparrow, and blackbird), except one specimen 'found alive in starling's nest,' and it is interesting to note that this was the only specimen with wings broken off. Nitsche's original type specimens were found on young starlings and were figured in Ahren's 'Fauna Insectorum Europae,' Fasc. ix, Tab. 24 & 25, as browner in colour with their distended abdomen apparently bearing shorter, more spinose, bristles; but it is difficult to believe that our British insect can be other than the same species. In fact, it seems possible that there is only one palaearctic species, though a second (*C. setosus*) has been described by Stobbe (1913, *Deuts. Ent. Z.*, **1913**: 193) from a woodpecker (*Picus major* Linn.). I have seen the types of this species and could not distinguish them from some Roumanian specimens in my collection from *Falco sacer* Gmel., which more closely agreed with Ahren's figures of *C. hemapterus* than do our British specimens. Moreover some of this same consignment of Roumanian specimens had been examined by Dr. Stobbe and passed as *C. hemapterus* Nitsche. De Meijere considered that this was certainly a blood-sucking species, but it seems more probable that Engel (1920, *Z. wiss. Insektenbiol.*, **15**: 249) was correct in suggesting that they fed upon skin secretions and fatty exudations from budding feathers.

---

* De Meijere in his masterly account of the genus (1912, *Schrift. Phys.-ökon. Ges. Königsberg*, 53: 1-18) mentions 'zwei sehr kurze Börstchen, in der Mitte des hinteren Scheitelrandes dicht nebeneinander gelagert,' as representing the postverticals, but I can find no trace of such bristles in any of my material, nor do they appear to be indicated in de Meijere's figures.

DROSOPHILIDAE.

Camilla atripes Duda.

This is the species incorrectly introduced by me as British in 1911 (1911, *Ent. Mon. Mag.*, **47**: 231) as *C. acutipennis* Lw. Mr. Basden found a specimen at the entrance to a rabbit's burrow at Temple (Berks) on Sept. 15th, 1934, and I can record it from Waxham (Norfolk).

There would appear to be differences of specific value in species of *Camilla* in the extent of microscopic dusting on thorax and abdomen. In the closely allied British species *glabra* Fln., and *fuscipes* Coll., the former has the greater part of notopleural depression devoid of dust, and a very small dusted area on third abdominal tergite; whereas in *fuscipes* nearly all the notopleural depression is dusted, and there is a large triangular dusted area on third abdominal tergite.

Raylands, Newmarket.
March 29th, 1939.

APHIS AND ANT POPULATIONS AT GARFORTH (YORKSHIRE) DURING 1937.

BY WALTER PICKLES.

1. INTRODUCTION.

During a survey of ants' nests on an area of ground at Garforth from 1932 to 1934 (2), I was struck by the prevalence of aphides on the willowherb (*Epilobium angustifolium* L.), and after leaving the area undisturbed for three years I made the following observations on the ant and aphis activities there. Previously three species of ants were to be found on the area of ground, which was 2,688 square yards in extent; only two were to be seen in 1937. They were *Myrmica scabrinodis* Nyl. and *Lasius niger* L. *Formica fusca* L. which was previously found there had vanished. A record of aphidid activity was made of the following species:—*Aphis epilobii* Kalt. on the willowherb (*E. angustifolium*), *Aphis sambuci* L. on the elder (*Sambucus nigra* L.) and *Euceraphis betulae* Linn. on the silver birches (*Betula alba* L.).

2. METHOD.

(*a*) ANTS: These were counted living and returned to the area when they had been counted.

(*b*) APHIDES: *Aphis epilobii* Kalt. These were estimated by taking, in the early stages of their multiplication, four plants infested with aphides from different parts of the area. These were preserved in methylated spirit and counted later. The average number was then estimated for these plants. At the same time as these samples were taken, the total number of plants infested with aphides was noted. In August, when practically every plant was affected to some degree, twenty plants were taken from different parts of the area. The aphides were counted, and, having previously estimated the number of plants on the area, the total number of aphides was calculated.

Aphis sambuci L. on the elder were estimated by first noting the number of elder bushes on the area, and then counting the clusters of aphides on each bush. From the average number per cluster, the total number on the bush and then on the area was estimated.

The willowherb grew very densely on most of the area, though some parts were absolutely bare. The number of plants on twenty separate square yards in different parts of the area averaged 21 per square yard, the actual density varying from 0 to 70 per square yard, so that there were about 56,448 willowherb plants on it. As it was difficult, in August, to find a plant which was not infested with aphides, it will be seen that an enormous number of them were living on the area during the summer months (i.e. 22,576,000).

3. The Increase of the Aphis Population.

(1) *Aphis epilobii* Kalt. Early in May, 1937, there were no plants attacked by these aphides; but by May 23rd, 1937, aphides were noticed on the willowherb for the first time. These were solitary individuals wandering about on the plant. On June 6th, 1937, two plants were affected, but the increase in population was not marked until July 7th, and from that date onwards (see Table 1). Delpino (4) traced a similar increase in population in 1873 of the larvae of *Tettigometra* on cardoon (*Cynara cardunculus* L.), but no definite figures are given.

Table 1. The increase of the *Aphis epilobii* population.

Date.	No. of plants affected.	Estimated population.
12.vi.37	2	214
15.vi.37	2	240
21.vi.37	2	327
7.vii.37	11	1,309
14.vii.37	16	2,320
23.vii.37	20	6,660
5.viii.37	56,448*	22,576,000

I also traced the infection of a single willowherb plant which was not isolated from the rest. On July 24th, 1937, this specimen, which was 4 ft. 7 ins. in height, had seventy-four leaves; it was completely ruined by August 5th, all the green leaves having turned brown.

By September 4th the willowherb had practically finished seeding and the aphides seemed to have deserted it. Very few plants had any number of aphides on them.

(2) *Aphis sambuci* L. These aphides were found on the elder bushes (*Sambucus nigra*) in clusters. These were all together and on the new shoots. There were altogether seven elder bushes on the area. The samples of aphides of these clusters were counted, and from these the average number in a cluster was estimated and from this figure the aphis population was then calculated (see Table 2).

---

* Estimated.

TABLE 2. The Population of *Aphis sambuci*.

Date.	No. of trees affected.	No. of clusters on trees.	Estimated population.
26.vi.37	7	22	8,910
7.vii.37	5	17	4,369
14.vii.37	2	8	1,456
23.vii.37	2	2	326
5.viii.37	nil	nil	nil

From this table it seems that the population was greatest in June, 1937. By August 5th all the clusters had vanished and a careful search failed to reveal any. This phenomenon is mentioned by Theobald (3), who states that towards the end of July these aphides leave the elder bushes. It seems that when the first census was taken the population was either at its maximum or on the turning-point towards decreasing.

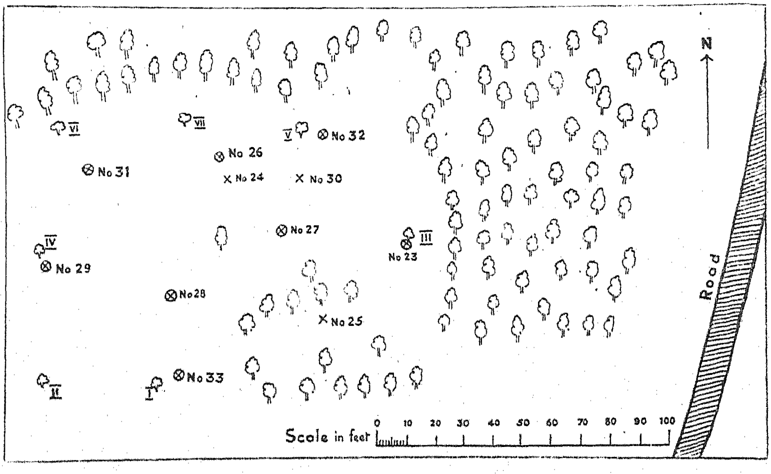


FIG. 1.—Plan of the area under observation showing ants' nests and elder bushes, marked with Roman numerals. Nests of *Lasius niger L.* are indicated by an X within a circle and nests of *Myrmica scabrinodis* Nyl. by an X. The area covered with silver birches (*Betula alba*) is marked with small drawings of trees.

In addition to willowherb and elder bushes, the silver birch trees were also troubled with aphides. These trees varied in height from 7 ft. to 20 ft. or 30 ft. By stripping a small one, I counted 1,150 aphides (*Euceraphis betulae*) upon it. As all these trees were heavily infested with apterous and alate forms, in June there must have been an enormous population of these aphides. The ants, *Lasius niger* in particular, crawled over these trees attending the aphides; they did not appear to give them the same attention as they gave to the aphides on elder or on willowherb.

4. ANTS AND APHIDES.

As mentioned previously, there were only two species of ants present on the area, i.e. *Myrmica scabrinodis* and *Lasius niger*, there being eleven nests of the latter and three of the former. In Table 3 there is given an analysis of the populations of these ants' nests. Both species of ants were found to attend the aphides on the plants, though *Lasius niger* alone was observed to attend the aphides on the elders, *Myrmica scabrinodis* apparently confining its attention to *Aphis epilobii*. The ants had, on this area, a plentiful supply of aphides from which to extract the 'honeydew.' The proportion of ants to aphides is given in Table 4; in this table the comparison is between the worker ants and the aphides, as it is only these forms which go about attending aphides.

TABLE 3. Analysis of the populations of the ants' nests.

Species.	Date.	No. of Nest.	☿☿	♂♂	♀♀	Larvae.	Pupae.	Total.
M. scabrinodis.	5.viii.37	24	820	27	1	—	32	880
	27.viii.37	25	1,643	—	31	16	142	1,832
	14.vii.37	30	687	—	—	—	9	696
L. niger	23.v.37	23	200	—	—	27	—	227
	5.viii.37	26	3,460	129	30	—	372	3,991
	12.viii.37	27	673	27	1	23	84	808
	4.ix.37	28	2,468	—	1	—	—	2,469
	7.ix.37	29	349	—	1	—	—	350
	7.vii.37	31	4,560	40	3	63	68	4,734
	23.vii.37	32	809	—	—	—	—	809
	12.vi.37	33	1,238	—	1	30	24	1,293

5. ANT TERRITORY AND POPULATION DENSITIES.

This attention to the aphides on the area has determined the territory of this ant (*L. niger*). A modification of the previous territory record for this species of ant must be given. One nest of *L. niger* was under a stone at the base of the main trunk of elder No. 3. This was Nest 23 (see Fig. 1). The ants from this nest simply crawled up the tree to attend the aphides there. I followed ants from Nest 31 (*Lasius niger*) to the nearest elder bush, No. 6, and found that they travelled 16 ft. before crawling up the trunk and along the branches. The height of the first branch from the ground was 2 ft. This distance was considerably further than the maximum distance previously recorded, namely 10 ft. (2). The territory of this ant, therefore, was 89·33 sq. yds. This would give an economic density (i.e. $\frac{\text{total number of ants}^{*}}{\text{total territory}}$) of 19·776 per sq. yd. This would give a lowest density (i.e. $\frac{\text{total population}^{*}}{\text{area of census}}$) of 5·258 per sq. yd. Elton (1) states that population densities may be expressed in these forms.

TABLE 4. Proportion of ants to aphides.

Date.	Species of ant.		*A. sambuci.*		*A. epilobii.*
12.vi.37	1 *L. niger*	to	—	...	·01
	1 *M. scabrinodis*	to	—	...	·07
15.vi.37	1 *L. niger*	to	—	...	·02
	1 *M. scabrinodis*	to	—	...	·08
21.vi.37	1 *L. niger*	to	—	...	·02
	1 *M. scabrinodis*	to	—	...	·10
26.vi.37	1 *L. niger*	to	·65	...	—
7.vii.37	1 *L. niger*	to	·32	...	·09
	1 *M. scabrinodis*	to	—	...	·41
14.vii.37	1 *L. niger*	to	·11	...	·17
	1 *M. scabrinodis*	to	—	...	·73
23.vii.37	1 *L. niger*	to	·02	...	·48
	1 *M. scabrinodis*	to	—	...	2·11
5.viii.37	1 *L. niger*	to	nil	...	1,641·06
	1 *M. scabrinodis*	to	—	...	7,166·98

With regard to *Myrmica scabrinodis*, there was the same territory as in the previous survey (2), namely 140 sq. yds., and this gave the economic density as 7·678 per sq. yd. and the lowest density as 1·199 per sq. yd.

6. CHECKS ON APHID ACTIVITY.

The aphides were preyed upon by their usual enemies, but they did not appear to be as common as in 1933. This particularly applies to the ladybird larvae; they were very numerous in 1933, but in 1937 they were rather scarce. The ladybirds captured were *Coccinella 7-punctata* L. and their larvae. Besides, there were lacewings (*Chrysopa perla* L.) and their larvae. On the birches I found many 'tents' of *Praon* sp. (Hym., Braconidae) beneath aphides.

---

* Pupae are not included in these totals.

7. RESULTS OF THE SURVEY.

On the area of ground which has been under observation, there has been the following sequence of aphis populations on the bushes and willowherb plants. In May there were *Euceraphis betulae* on the birches, and until July there were *Aphis sambuci* on the elders. Thus from May to July there were three species of aphides on the plants. Afterwards there was only *Aphis epilobii* on the willowherb until September.

8. ACKNOWLEDGMENTS.

I wish to thank experts at the Natural History Museum for verifying specimens: Coleoptera, Dr. K. G. Blair; Neuroptera, Mr. D. E. Kimmins; aphides, Mr. Frederick Laing; and ants, Mr. H. St. J. K. Donisthorpe. To Mr. C. S. Elton my thanks are due for help and suggestions.

9. SUMMARY.

1. A record of aphis populations on an area of ground at Garforth (Yorks) in 1937 is given.

2. Aphides. There were three species of aphides investigated, *Aphis epilobii* on the willowherb, *Aphis sambuci* on the elder bushes and *Euceraphis betulae* on the birches. A record of the varying populations during June, July and August, 1937, was made of the two former species. *Aphis epilobii* increased to an enormous number by August (i.e. 22,576,000), while *Aphis sambuci* decreased during these months until they had vanished by August.

3. Ants. Only two species were found, *L. niger* and *M. scabrinodis*. The territory of the former species was found to be greater than during a previous survey (i.e. the maximum foraging distance being 16 ft. in comparison with 10 ft. previously recorded). This gave a territory of 89·33 sq. yds.

4. Ants and Aphides. A comparison of the ant and aphis populations was made, as the ants (especially *L. niger*) attended the different species of aphides to obtain 'honeydew.'

5. The aphides were preyed upon by ladybirds and their larvae (*Coccinella 7-punctata*), lacewings (*Chrysopa perla*) and the Braconid *Praon* sp.

REFERENCES.

(1) ELTON, C. (1932). Territory among wood ants (*Formica rufa* L.) at Picket Hill. *J. Anim. Ecol.*, **1**: 69-76.

(2) Pickles, W. (1935). Populations, territory and interrelations of the ants *Formica fusca, Acanthomyops niger* and *Myrmica scabrinodis* at Garforth (Yorkshire). *J. Anim. Ecol.*, **4**: 22-31.

(3) Theobald, F. V. (1927). 'The plant lice or Aphididae of Great Britain.' **2**: 97.

(4) Delpino, F. (1875). On the fondness of ants for certain Homoptera. *Ent. Mon. Mag.*, **12**: 10-12.

23 Beech Grove Avenue,
Garforth, Leeds.
March 14th, 1939.

TYPHLOMYRMEX RICHARDSI (HYM., FORMICIDAE), A NEW SPECIES OF PONERINE ANT FROM BRITISH GUIANA.

BY HORACE DONISTHORPE, F.Z.S., F.R.E.S., ETC.

Typhlomyrmex richardsi sp.n.

♂. Head black, body dark brown, femora, tibiae and funiculi brownish yellow, clypeus, mandibles at apex, scapes, tarsi, and genitalia lighter. Whole body covered with longer and shorter suberect and yellow hairs.

Head broader posteriorly than anteriorly, posterior angles and border rounded, semiopaque, feebly rugose with small shining spots posteriorly; *clypeus* smooth and shining with anterior border moderately excised in centre; *mandibles* curved and pointed, with one small tooth on masticatory border near apex, shining, faintly striate, and with a few small scattered punctures; *frontal area* small, but well defined and shining; *front* shining; *eyes* large, convex, hairy, situated on anterior half of sides of head, but not extending over half the side of the head; *ocelli* placed well back; *antennae* long, *scape* reaching beyond median ocellus, slightly longer than the first three joints of the funiculus taken together; *funiculus* filiforme, second joint equal to first in length, longer than third, last four joints gradually increasing in length, last joint as long as the two preceding taken together. *Thorax* narrowed anteriorly and posteriorly, very finely punctured, not very convex; *mesonotum* arched and sloping forward. *Mayrian furrows* only distinct in front; *scutellum* rounded, shining; *epinotum* smooth and shining, rounded and sloping to base, without a distinct declivity; *node of petiole* smooth and rounded above, with an outstanding ridge beneath; *gaster* somewhat smooth and shining, constriction after the *post-petiole* distinct; *sub-genital lamina* in the form of a long, narrow point; *stipes* somewhat broad and rounded; *volsellae* narrow. *Wings* translucent, covered with very fine, short hairs; *veins* and *pterostigma* pale brown; *forewing* with one *discoidal*, one closed *cubital* and the *radial* cell open at the extremity. (The wings, however, are very variable; some specimens have the radial cell closed, some are without a cubital cell.)

Long. 2.6—2.8 mm.

Named from very many males taken by Dr. O. W. Richards in the nest of a wasp, *Polybia bistriata* F.; British Guiana, Mazaruni clearing, 13.viii.37.

Type in British Museum (Nat. Hist.). Emery divides his tribe

Typhlomyrmicini into two genera, *Prionopelta* Mayr and *Typhlomyrmex* Mayr. He states that in the male the scape of the antennae is notably longer than the two first joints of the funiculus taken together. In the characters of the genera, however, he gives the length of the scape in *Prionopelta* as being only as long as the two first joints of the funiculus; and in *Typhlomyrmex* as only as long as the three first joints, which is not notably longer than the first two. Only two males of the latter genus have been described—*T. clavicornis* Emery var. *divergens* Forel from Paraguay, and *T. rogenhoferi* Mayr from Brazil, Missiones, and Costa Rica. From the first of these *richardsi* differs in being distinctly smaller, and in the structure of the mandibles and antennae. From the second in being lighter in colour, smoother, especially the head, and with a longer scape to the antennae, structure of the mandibles, etc.

Entomological Department,
British Museum (Nat. Hist.), S.W.7.
May 22nd, 1939.

NEW SPECIES OF ASIATIC STAPHYLINIDAE (COL.).*

BY MALCOLM CAMERON, M.B., R.N., F.R.E.S.

Scimbalium (Schatzmayria) rufotestaceum sp. nov.

Entirely reddish-yellow; the head and thorax more shining than the elytra and abdomen. Antennae and legs reddish-yellow. Length 5 mm. Colour and lustre of *aegyptiacum* Bernh., but smaller, the head narrower, the eyes smaller, the antennae shorter, thorax much less punctured.

Head subquadrate, slightly longer than broad, a little broader than the thorax, the eyes small, a fourth as long as the temples; impunctate in front and along the middle, elsewhere finely and sparingly punctured and with a very fine transverse wavy ground-sculpture. Antennae with the third joint longer than the second, the penultimate joints about twice as long as broad, the eleventh as long as the tenth. Thorax longer than broad (7 : 5.5), the sides rather strongly retracted behind, broadly impunctate along the middle, elsewhere with very fine scattered punctures; ground-sculpture absent. Elytra broader and slightly longer than the thorax, more finely, not quite so closely punctured as in *aegyptiacum*, finely and rather closely pubescent. Abdomen closely and finely punctured and pubescent throughout.

KHIVA (*Zimin*).

Othius opacipennis sp. nov.

Black; head, thorax and abdomen shining; elytra dull. Antennae black; palpi reddish yellow. Legs pitchy, tarsi reddish. Length 10 mm. Near *ruficornis* Cam., but differs in the colour of the antennae, the narrower, more oval head, less coarsely punctured post-ocular and basal areas and larger eyes, the longer elytra, which are also less finely and more closely punctured.

---

* The types of these species are in Coll. J. Clermont, co-types in the author's.

Head oval, as broad as the thorax, with a few small punctures in the inter-ocular impressions, the post-ocular region and base with moderately close umbilicate punctures; ground sculpture extremely fine and transverse. Antennae with the third joint longer than the second, fourth and fifth slightly longer than broad, sixth and seventh about as long as broad, eighth to tenth slightly transverse. Thorax longer than broad, the sides sinuately retracted behind, near the anterior angles with a group of three or four punctures; otherwise impunctate, except for the usual marginal punctures; ground sculpture as on the head. Scutellum almost impunctate, distinctly coriaceous. Elytra as long as the thorax, moderately finely and moderately closely punctured, strongly coriaceous. Abdomen more finely and more closely punctured than the elytra.

YUNNANFOU.

Astilbus canaliculatus F. sub-sp. **armeniacus** n.

This sub-species differs from the type form in the head and thorax being distinctly more deeply and coarsely punctured.

ARMENIA.

15 Teesdale Road,
Leytonstone, London, E.11.
June 17th, 1939.

Proctotrupinae in Dumfriesshire.—Having recently worked through the Proctotrupinae I had taken in this county with Mr. G. E. J. Nixon's Revision (1938, *Trans. R. Ent. Soc. Lond.*, **87**: 431-66), I find I have sixteen of the twenty-nine British species. Mr. Nixon has seen one or more specimens of each species, and I am grateful for his assistance in their determination. *Exallonyx ligatus* (Nees) is, along with the next, the most abundant species here; Gretna, 9.vii to 7.ix; Newton Moss, 10.v; Raeburn Flow, 27.vii. *E. microcerus* (Kieff.), common along hedgerows, etc., from 6.vii to 17.ix. *E. longicornis* (Nees), taken in a wood at Quentin's Hill, 18.vii, and on Nutberry Moss, 2.viii. *E. curtigena* (Nix.), one swept near Gretna, 25.v, and one at Quentin's Hill, 9.v. *E. brevicornis* (Hal.), rare, one swept at Springfield, 11.v. *Paracodrus apterogynus* (Hal.) is not uncommon in July and August. *Disogmus areolator* (Hal.), a very distinct species; one beaten on railway bank near Gretna, 20.v. *D. basalis* Thoms., not uncommon from mid-May to mid-July. *Proctotrupes gravidator* (Linn.), two ♂♂ swept on Newton Moss, 25.viii. *P. gladiator* (Hal.): of this fine species I captured a ♂ while sweeping long grass at Springfield, 24.viii, and a ♀ from flood refuse on the Solway near Gretna on 14.ix. *Phaenoserphus viator* (Hal.), frequently met with from July to September in woods, lanes, etc. *P. pallipes* (Latr.), Gretna, Eastriggs, Nutberry Moss, etc., occurs fairly frequently from July to mid-September. *P. vexator* (Nix.), two ♂♂ at Quentin's Hill in July. *P. calcar* (Hal.), not uncommon along hedgerows in June, and I have swept it in September. *Cryptoserphus aculeator* (Hal.), rare, a single specimen swept near Gretna, 29.v. *C. laricis* (Hal.), widely distributed and not rare; all my specimens were met with in May. It is possible several other species may yet be found in the county.—JAS. MURRAY, 6 Burnside Road, Gretna, N.B.: *May 16th*, 1939.

Pyropterus affinis Payk. (*Col., Lycidae*) *and its larva.*—On May 6th, 1939, while with other members of the Yorkshire Naturalists' Union in Stapleton Park, near Pontefract, I stopped to investigate a fallen tree. I did not notice the species, but it was not a conifer. Numerous Elaterid larvae were found. These have not yet emerged, but are probably *Melanotus rufipes* Herbst. There were also several larvae which aroused my curiosity because of their shape and peculiar colour. These emerged on June 5th and proved to be *Pyropterus affinis* Payk. The larva is of an intense ivory white colour, practically footless and very sluggish; possibly it is more active when in earlier stages. On the upper side of each segment are two transversely oblong patches of the colour of a walnut shell, separated from each other and from the segmental borders by a thin line of the ground colour. When full grown the larva measures about five-eighths of an inch long and is fairly broad in proportion, rounded and perfectly soft. Three days before emergence the body becomes gradually suffused with black and at the same time the elytra push forward over the body. These are at first a pinkish-brown of the colour of strawberry juice, which almost imperceptibly intensifies into the blood red of maturity.

The discovery of the species in Broc-o-dale adds another locality to the few in which it has been found. Until now the only locality in England, beside Sherwood Forest, has been Wheatley Wood, near Doncaster, where I took larvae on 23rd October, 1890, which emerged May 16th to 18th, 1891, and where also H. Vincent Corbett took a single specimen on the wing in 1903. The new locality is about fifteen miles N.W. of Wheatley Wood.—E. G. BAYFORD, 16 Rockingham Street, Barnsley: *June 6th*, 1939.

Reviews.

'A PRELIMINARY LIST OF THE COLEOPTERA OF WINDSOR FOREST.' By H. ST. J. DONISTHORPE. 8vo, 126 pp., 1 pl. Published by Nathaniel Lloyd & Co. Ltd., London. 1939. Price 6/6.

It is not only as a complete list of all the Coleoptera known to occur in Windsor Forest that this book is a valuable contribution to our knowledge of the British Beetles. The number of species recorded shows what results can be achieved by patient and diligent collecting in a given area over a number of years: consequently the book should be a stimulus to the experienced collector as well as to the amateur. Furthermore, the author has given plentiful notes as to the habits and dates of appearance of each species, thereby making the book not merely a list of local interest, but a handbook useful for collectors in other areas. In addition to the 105 pages devoted to the species and their habits, there is an extensive bibliography and a 10-page introduction giving a concise account of other aspects of the fauna and flora of Windsor and containing many interesting items of information. The book certainly deserves a place in the libraries of British entomologists.—C. E. TOTTENHAM.

'NORTH WESTERN NATURALIST.' Vol. XIV, No. 1, pp. 1—111, 8vo. 1939. T. Buncle & Co. Ltd., Arbroath. Price 2/- net; annual subscription 7/6.

The current number of this interesting quarterly journal of general natural history contains, among other items, an obituary of the Rev. G. H. Carpenter (with portrait), records of Cumberland Diptera (J. Murray), and notes on peacock butterflies and *Vespa vulgaris* L. in the Orkneys (J. G. Marwick), on the natural history of Reighton, East Riding of Yorkshire (T. H. Parker), and on the economic importance of ants (B. D. W. Morley).

'BUTTERFLIES AND MOTHS OF THE WAYSIDE AND WOODLAND.' By W. J. STOKOE. Based upon the standard works 'The Butterflies of the British Isles' and 'The Moths of the British Isles,' by Richard South, F.R.E.S. pp. vi+309, 71 col. pls., 25 text-figs. 6⅜ in. × 4⅝ in. Published by F. Warne & Co. Ltd., London. 1939. Price 7/6.

Mr. Stokoe has condensed South's brilliant three volumes to the compass of a single book by careful selection of the 430 species most frequently encountered. The nomenclature has been revised, although unfortunately authorities for trivial names are again lacking; the descriptions are more concise than those of the parent volumes, but include all essential details and the latest information concerning habits. The coloured illustrations of the imagines are very good, although in several instances they do not attain the very high standard of the original impression; figures of the immature stages are omitted. We can recommend this book to beginners, schools, and the general naturalist; it is good value at the price.—B.M.H.

'FAUNISTISCHER FÜHRER DURCH DIE COLEOPTEREN-LITERATURE. Die wichtigste Käfer-Literatur nach geographischen Gebieten geordnet.' By S. SCHENKLING. Band 1: Europa, Lieferung 3 (pp. 129—192) and 4 (pp. 193—256). 7 in. by 9¾ in. Published by Gustav Feller, Neubrandenburg (Meckl.).

The entries in this useful guide to the literature of Coleoptera are grouped geographically, the catalogues being listed first, followed by general papers, papers concerned with many families, and lastly those on single families, in systematic sequence. The inclusion in the margin of names of families, etc., make the work an extremely easy one to consult. Lieferung 3 contains lists of papers on the fauna of Sweden (conclusion), Denmark, Iceland, Lapland, Finland, Esthonia, Latvia, Lithuania and Russia (Part 1). Lieferung 4 deals with Russia (conclusion), Caucasus, Poland, Carpathian and Beskiden Mts., Central Europe, Czecho-Slovakia, Hungary and Sweden (Part 1).

'ERGEBNISSE DER INSEKTENBIOLOGIE. BAND I. DIE BRUTFÜRSORGE- UND BRUTPFLEGEINSTINKTE DER KAFER.' By H. v. LENGERKEN. 8vo, 285 pp., 188 figs. Published by Akademische Verlagsgesellschaft M.B.H., Leipzig. 1939. Price RM. 19.60.

This book is a welcome addition to literature on Coleoptera. Our knowledge of life-histories in this order is deplorably small, and literature on the subject for the most part consists of small papers. The author has amassed a wealth of information, and has so arranged his material as to show the various methods adopted by beetles to ensure the upbringing of the young, both with regard to the eggs and also the larval and pupal stages. The descriptive matter is accompanied by numerous illustrations, for the greater part showing the burrows of bark beetles, methods of leaf-rolling, and the burrows and food-balls for the larvae of coprophagous beetles. While being a scientific treatise, the work is at the same time most interesting reading. It is a book which no student of insect biology can afford to be without.—C. E. TOTTENHAM.

Lebia crux-minor L. (*Col., Carabidae*): *a correction.*—In Fowler (1887, The Coleoptera of the British Islands, **1**: 138) it is stated that I took a specimen of *Lebia crux-minor* L. at Basingstoke. This is not correct, as I took the beetle at Crohamhurst, near Addington, Surrey.—W. J. SAUNDERS, Milestones, Tilford, near Farnham, Surrey: *June 11th*, 1939.

SOME NEW SPECIES OF STAPHYLINIDAE (COL.).

BY C. E. TOTTENHAM, M.A., F.R.E.S.

(Continued from p. 131).

Zyras spineus n.sp.

In general appearance very like *Z. pustulipennis* Bernh., from which it differs by the less closely punctured head, much more thickly punctured elytra and more shining thorax. Head black, rather dull; rest of the body shining; thorax red-brown; elytra red-brown, strongly infuscate nearly all over, except at base, and more feebly at suture; abdomen red-brown with the last four segments black; antennae dark red-brown; palpi and legs light red-brown, tarsi infuscate.

Head twice as broad as long; front strongly and narrowly produced and rounded; eyes rather prominent, occupying three-quarters of the sides of the head; posterior angles obtusely rounded; base feebly concave; surface closely covered with a strong regular micro-puncturation, and with a moderately fine and diffuse puncturation. *Antennae* short and stout; first segment about twice as long as broad, broadly incrassate; second about half its length, conical; third slightly longer than the second, strongly flattened and dilated towards apex; fourth to tenth about equal in length, transverse, about one and a half times as broad as long; eleventh long, stout, fully as long as the first. *Thorax* slightly broader than the head, broadest in front, not strongly narrowed behind; a little broader than long (6 : 5); front margin distinctly produced; all the angles obtuse and rounded, posterior pair more obtusely than the anterior; sides feebly rounded in front, but almost straight and convergent behind; base flatly rounded; surface as on head, but microsculpture a little finer, and the punctures closer and a little stronger. *Elytra* broader than thorax, a little widened behind, together broader than long, much more closely and strongly punctured than the thorax, ground sculpture very much smaller and more scattered and irregular. *Abdomen* with very minute transverse ground sculpture and a few very small scattered punctures on each segment.

Male.—Third tergite with apical margin straight and broad, terminated on each side by a short prong, the prongs parallel.

Length 8.5 mm.

Type (♂, unique): S. RHODESIA: Melsetter dist., Tandai R., 1.xi.1928 (*R. H. R. Stevenson*), in my collection.

Zyras intervulsus n.sp.

A very distinct species, by reason of its very long antennae. Head blackish; thorax red-brown; elytra red-brown, infuscate; abdomen red-brown at base, apical three segments blackish; legs, palpi and antennae light red-brown, the latter with the segments slightly infuscate at their apices.

Head very strongly transverse, about twice as broad as long; front strongly produced and rounded; sides parallel; posterior angles rectangularly rounded; eyes large, occupying three-quarters of the sides; a transverse depression between the antennae; surface covered with a microscopic puncturation, and a few other very fine and diffuse punctures. *Antennae* elongate, with all the segments very much longer than broad; first segment strongly widened in apical half; second about half the length of the first; third fully as long as the first; fourth to seventh about equal in length, about three-fifths the length of the third; eighth to tenth slightly shorter; eleventh very long, nearly as long as the third. *Thorax* strongly transverse, a half as broad again as long; widest in front, much narrower behind; front margin straight; anterior angles marked, almost right-angles; sides nearly parallel in front, convergent and slightly excavate behind; posterior angles obtusely rounded; base feebly curved; surface with a much stronger microsculpture than on the head, and with a few small scattered granules. *Elytra* broader than the thorax; together much broader than long (19 : 13); slightly wider behind than in front; surface covered with a strong, regular honeycomb microsculpture, and fairly close small granules, which are stronger and closer than on the thorax. *Abdomen* smooth and shining; microsculpture very minute and transverse; punctures very few, very fine and scattered. *Legs* long and slender.

Length 9 mm.

Type (♀, unique): S. RHODESIA: Bulawayo, 10.ii.1927 (*R. H. R. Stevenson*), in my collection.

Zyras zopyrus n.sp.

Close to Z. procax Pér., but differing in the shape of the head, and the less transverse thorax, with its more convex anterior margin. Body shining; head black; thorax and elytra light red-brown; abdomen dark red-brown, infuscate at the base of each segment; palpi and legs light red-brown; base of antennae dark red-brown, the rest strongly infuscate.

Head triangularly produced in front; eyes flat, occupying one-half the sides; sides behind eyes bulging, obtusely rounded; base at each side obliquely straight to neck, concave in the middle; puncturation moderate; surface smooth. *Antennae* short and stout; first segment flattened, broad, twice as long as broad; second flattened, half the width of the first, and about one-third its length; third flattened, twice as long as second, very narrow at base, wider than second at apex; fourth to tenth about equal in length, gradually widened, fourth nearly twice as broad as long, tenth fully two and a half times as broad as long; eleventh longer than the two preceding together, a half as long again as broad *Thorax* a little broader than the head, broader than long (11 : 9); anterior margin strongly produced and rounded; anterior angles obtusely rounded; posterior angles very obtusely rounded; base rounded; thorax widest at anterior quarter; sides feebly rounded in front, almost straight and a little convergent behind; surface smooth, with punctures a little closer and stronger than on the head. *Elytra* wider than thorax, together broader than long; puncturation a little closer and stronger than on the thorax. *Abdomen* with puncturation on the basal segments about as strong and as close as that of the thorax, more diffuse and finer towards the apex.

Length 7 mm.

Type (♀, unique): S. RHODESIA: Melsetter dist., Pentridge, 9.ii.1928 (*R. H. R. Stevenson*), in my collection.

Zyras nyctelius n.sp.

Differs from *Z. okahandjae* Bernh. by its much duller head, with closer microsculpture, and by its much more closely punctured thorax and elytra. Head dull, brownish-black; rest of the body shining, red-brown, with the elytra somewhat lighter, and sixth abdominal segment black except at sides and hind margin; palpi, antennae and legs red-brown, with femora lighter, and antennae darker.

Head twice as broad as long; eyes rather prominent, occupying nearly the whole of the sides; posterior angles rounded, obtuse; base very feebly concave; surface covered with a strong honeycomb microsculpture and minute indistinct diffuse puncturation. *Antennae* short and stout; first segment narrow at base, widened and flattened apically; second small, less than half the length of the first; third twice as long as second, flattened and strongly broadened at apex; fourth to tenth strongly transverse, twice as broad as long; eleventh stout, narrowed to apex, nearly as long as the three preceding together. *Thorax* broader than head; a little transverse; front margin convex; anterior angles very obtusely rounded; sides nearly straight, distinctly, but not strongly, convergent behind; posterior angles obtuse; base rounded; surface moderately punctured, the punctures irregular and moderately diffuse, especially at the sides; with a scattered micro-puncturation. *Elytra* a little wider than thorax, slightly widened behind; together broader than long; sculpture as on thorax, but punctures a little stronger and more regular. *Abdomen* with transverse micro-sculpture, and distinct, fairly fine scattered punctures.

Length 9.5 mm.

Male.—Third tergite with apical margin broadly and distinctly concave in centre, rectangularly angled at sides, with a long prong on each side outside the angle; the prongs are slightly divergent, situate just beyond the sides of the abdomen, and reaching the apex of the next segment; in the centre a broad triangular distinct depression before the apex; sixth tergite with two indistinct tubercles near the middle; seventh with two rows of four tubercles each, the second row being marginal and indistinct; eighth with a row of four tubercles near base, another of two in the middle widely separated, and a third near margin of two placed close together; apical margin narrow and excavate.

Type: S. RHODESIA: Insiza R., 8.xii.1926 (*R. H. R. Stevenson*), male, in my collection; paratype, also male, S. RHODESIA: Melsetter dist., Tandai R., 1.xi.1928, in my collection.

Zyras rhadamanthus n.sp.

Easily distinguished from *Z. bispinulosus* Bernh. by its larger size, and by its more strongly punctured abdomen. Head black, dull; rest of the body only moderately shining; thorax and elytra dark red-brown; abdomen black, brownish at base, with the margins of the segments brown; palpi red-brown; antennae dark red-brown, infuscate; legs red-brown, femora lighter, tarsi infuscate.

Head strongly transverse; front produced and rounded; eyes prominent, occupying nearly the whole of the sides; posterior angles obtusely rounded; base at each side oblique to neck, where it is concave; surface covered with a regular, very close, honeycomb micro-sculpture, and with distinct, fine diffuse puncturation. *Antennae* as in *Z. nyctelius* mihi. *Thorax* a little broader than head; broader than long (6: 5); anterior margin feebly rounded; anterior angles obtusely rounded; sides rounded in front, straight and convergent behind; thorax widest at anterior third; posterior angles obtusely rounded; base feebly rounded; micro-sculpture larger but not stronger than on head; puncturation moderate, diffuse, irregular. *Elytra* broader than thorax, together broader than long; puncturation stronger and more regular than on thorax; micro-sculpture very slight, apparently a minute diffuse puncturation. *Abdomen* with feeble transverse micro-sculpture; punctured at base much as on the elytra, more finely towards the apex.

Length 9.5 mm.

Male.—Third tergite with apical margin concave in centre, not very broad, obtusely angled at each side, beyond the angle with a short incurved prong; seventh tergite with four indistinct tubercles.

Type (♂, unique): S. RHODESIA: Bulawayo, 25.xii.1926 (*R. H. R. Stevenson*), in my collection.

Zyras sudus n.sp.

Head pitchy brown, moderately shining; thorax and elytra red-brown, scarcely shining; abdomen shining, red-brown, with sixth segment entirely and seventh except at hind margin black; palpi and legs light red-brown; antennae red-brown with the first and second segments and apex of the last lighter.

Head strongly transverse; front narrowly, strongly, triangularly produced; eyes large, prominent, occupying three-quarters of the sides; sides behind eyes strongly convergent; base broad, concave; puncturation diffuse and fine, especially on the disc; a very fine diffuse micro-puncturation. *Antennae* moderately long; first segment nearly three times as long as broad; second less than half the length of the first and much narrower; third twice as long as the second, much narrower at the base, twice as broad at apex; 4th transverse, but not strongly so; fifth to tenth shorter than fourth, about equal in length, scarcely widened towards apex, strongly transverse, about twice as broad as long; eleventh stout, longer than the two preceding together. *Thorax* in front as wide as head, narrower behind; a little broader than long (11: 9); anterior margin rounded; anterior angles obtusely rounded; sides rounded in front, straight and parallel behind; posterior angles obtusely rounded; base almost straight; both micro- and ordinary puncturation similar to that of head, but much closer and more distinct. *Elytra* very much broader than thorax (17: 11 at greatest widths); together broader than long (17: 13); widened behind; micro-sculpture finer and more indistinct than on thorax; punctures a little stronger and much closer than on thorax. *Abdomen* smooth, with a few very diffuse and very minute punctures at base.

Length 8 mm.

Type (♀, unique): NATAL: Malvern, xii.1898, in my collection. (Collector's name not known.)

Staphylinus ejulans n.sp.

General colour dull black, with the last segment of the abdomen and the terminal styles brown, and with the basal segment of the antennae beneath, the apical segment of the palpi, and the tarsi dark rufo-piceous. The pubescence is for the most part dark grey, with some short scattered golden hairs interspersed without forming any pattern, and with patches of short close velvety black pubescence.

Head slightly transverse, the greatest width being at the hind angles. The front margin is almost straight, scarcely concave; the anterior angles are about 120°, and are evenly rounded; the side of the head from the anterior angle to the eye is distinctly emarginate, and is in length equal to about two-thirds of the anterior margin. The eyes are large and flat, and occupy nearly half the sides of the head. The sides behind the eyes are straight and distinctly divergent to the hind angles, which are slightly acute and rounded. The base of the head is concave, so that the head is shortest in the middle. The surface is closely covered with fairly large, hair-bearing punctures; these punctures become very close on the posterior half of the head, where in fact they become so close that they leave no intervening space and give a honeycomb appearance; at the sides (*i.e.* when viewed laterally) the punctures are large and more remote than elsewhere. There is a smooth (though not quite impunctate), narrow, shining, distinct but ill-defined central line extending the whole length of the head, with two other less defined lines from before the middle of this line to the anterior angles. These smooth lines form a 'Y' with its stem produced upwards—Ψ. The oblique lines mark the edges of a faint frontal depression, and it is possible that they are not always apparent. The interstices between the punctures reveal a brassy tint. The pubescence is short and much denser in the basal half, where there are distinct patches of close short black pubescence, which take the form of small tufts towards the sides and of short transverse wavy lines on the disc on either side of the central line. In addition to this pubescence there are a few long outstanding setae on each side of the head, two before the eye, one on the inner margin of the eye, and three behind the eye. *Antennae* short, not much longer than the head, inserted below and outside the anterior angles. The first segment reaches to the outer anterior angle of the eye; the second is slightly longer than broad; the third is longer than the second and about one and a half times as long as broad; fifth to tenth gradually decreasing in length and very slightly increasing in width, transverse, the fifth slightly so and the tenth strongly; the eleventh slightly transverse, and acuminate externally. There is a long seta, in addition to the other hairs, on the inner side of the first segment. *Labial palpi* with the last segment distinctly longer than each of the two preceding, which are about equal, truncate at the apex and flat oval in section. *Maxillary palpi* with the last segment longer and distinctly narrower than each of the two preceding, cylindrical; the second and third about equal in length, nearly twice as long as broad, much broadened at the apex. *Thorax* distinctly longer than broad, very little wider than the head, parallel-sided, with the base evenly rounded and almost semi-circular so that there are no posterior angles. The anterior angles are well marked and rectangular but rounded. The thorax is slightly impressed laterally near the anterior angles. There is a smooth shining central line, as in the head, traceable throughout. The sculpture towards the front is similar to that of the base of the head, and towards the base it becomes even more close and confused. The pubescence also on the front half is similar to that of the base of the head; towards the base of the thorax the black patches become thicker and more confused until they form a common large black patch on the disc on either side of the central line. There are also two very long outstanding setae on each side of the thorax, one near the anterior and one near the posterior angles. The *scutellum* is an equilateral triangle in shape; stretching from its base to the apex there is a large long-oval patch of velvety black pubescence. *Elytra* longer and wider than the thorax, very dull but of a slightly more brownish tint than the rest of the insect, the extreme margins and reflexed portions of the sides black. The puncturation is much thicker, finer and more indistinct than that of the thorax. The pubescence is short grey-black mingled with numerous scattered short golden hairs. *Abdomen* dull and dark, covered with grey pubescence which is closer and longer towards the sides. The puncturation, which is difficult to see by reason of the pubescence, is apparently close and fine. As elsewhere there are a few golden hairs scattered about, but these show a tendency to be more numerous in the centre of the basal margins of the segments. On each segment there are two black patches of velvety pubescence extending the whole length of the segment from base to apex; these patches are divergent and narrowed towards the hind margins of the segments. The seventh segment and the terminal styles are brownish. Segments 5-7 have on each side a large deep puncture at the apex of the black patch and two or three others near the sides, these punctures bearing long setae. *Legs* with the tibiae strongly spinose; the inner apical spur being quite twice as long as the other apical spines. Posterior and middle tarsi long, nearly as long as the tibiae; the basal segment the longest, nearly equal to the three following united; segments 2-4 decreasing in length; last segment about equal to the third and fourth united. Claws equal, slender, and curved, in length about two thirds the length of the last segment. Anterior tarsi with the four basal segments strongly dilated in both sexes.

Beneath, the head has a number of punctures of various sizes arranged chiefly on either side of the median suture, smooth towards the sides. Abdomen fairly closely, finely and regularly punctured, with a few deep, setigerous punctures placed transversely on each segment near the hind margin.

Male with the seventh sternite emarginate in a broad, not very deep curve, and with a smooth triangular depression in the middle in front of this emargination. *Aedeagus* with the paramere small, narrow and pointed, extending halfway to the apex of the median lobe. The median lobe is not in the form of a tube, but is open the whole length of the side opposite the paramere. Viewed from the side on which the paramere is fixed, it appears to be broad, parallel-sided, square at the apex, with the apical angles cut off; if however it be turned so that the paramere lies to the side, it will be seen that the apex is in reality emarginate, and that the angles are bent over forming hooks. The shape of the median lobe is hard to describe in words, but can be readily seen from the accompanying figures (Figs. 1-3).

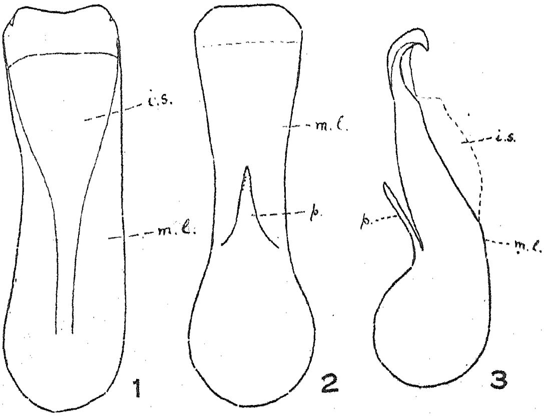
Length 15 mm.

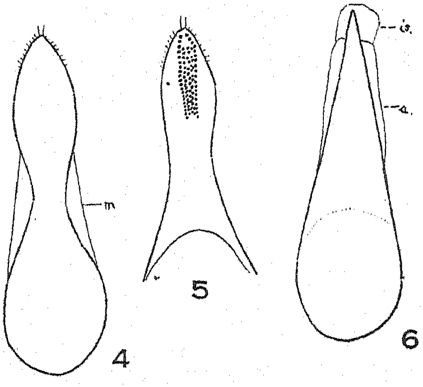
As the only specimen before me is a dried specimen, I have not been able to ascertain the shape or armature of the internal sac. Neither have I been able to ascertain in what position the aedeagus lies in the abdomen.

Type ♂: COSTA RICA: 1,000—1,200 m. (*Nevermann*), in my collection.

Trigonopselaphus putidiusculus n.sp.

Head and thorax coppery-black, fairly shining; elytra coppery with slight greenish reflection, very shining; abdomen deep steel-blue, very dull, except the anal segment which is reddish and shining, the styles being blackish; palpi pitchy, antennae blackish, both the antennae and palpi being light at the extreme apex of the apical segments; legs black.





Aedeagus of *Staphylinus ejulans* n.sp.

FIG. 1.—Viewed from side opposite to the paramere, to show the open median lobe.

,, 2.—Viewed from side on which is the paramere.

,, 3.—Side view of median lobe and paramere.

i.s. = internal sac (not evaginated); m.l. = median lobe; p. = paramere.

Aedeagus of *Trigonopselaphus putidiusculus* n.sp.

FIG. 4.—Paramere (m. = median lobe).

,, 5.—Paramere, inner surface, to show arrangement of pegs.

,, 6.—Median lobe, inner surface (a. = approximate outline of outer surface; i.s. = internal sac).

Head broad, the length being about two-thirds of the breadth, widened behind, the posterior angles broadly rounded. Head behind the eye about a third longer than the length of the eye. In the centre between the eyes there is a very large, circular, but very shallow depression. The front margin of the head is also separated from the vertex by a distinct transverse impression stretching between the points of insertion of the antennae. The head is covered with irregular, strong punctures, consisting of large and smaller punctures, except for a narrow strip between the eyes immediately behind the transverse depression. The head is covered with a distinct micro-sculpture of scratches forming an irregular network, oblong in character. *Mandibles* short, stout, strongly curved in the apical half, very bluntly toothed in the middle of the inner margins; the teeth are double, and so blunt as to be knobs rather than teeth. *Maxillary* palpi with the apical segment slightly longer than the penultimate. *Antennae* not reaching the base of the thorax. First segment long; second much longer than broad, equal to half the first; third about one and a half times the length of the second; fourth and fifth sub-equal, distinctly longer than broad; sixth but slightly longer than broad; seventh as broad as long; eighth, ninth and tenth slightly transverse; eleventh short, about equal to the fourth, pointed. *Thorax* as long as broad, slightly wider than the head. The thorax is broadest just behind the large marginal setigerous pore at the anterior third. The sides are slightly narrowed anteriorly, the anterior angles are very obtusely rounded, and then continued in a straight line to the insertion of the neck, where the thorax is narrowest, anterior margin straight. The sides are distinctly narrowed behind in a slightly sinuate line to the posterior angles, which are widely and evenly rounded with the base. The puncturation and ground sculpture are similar to those of the head; there is a narrow impunctate longitudinal line in the centre of the thorax, extending from the base for about two-thirds of its length. The punctures are scarcer towards the posterior angles, and closer and smaller towards the anterior angles. *Elytra* wider than the thorax, widened behind, as long as broad, much shorter at the suture, posterior angles much rounded. The puncturation is strong and even, and consists of very large close punctures with small punctures in the interstices. *Scutellum* large, in shape an equilateral triangle; punctured in the apical portion only, where the inner punctures are strong and irregular and those at the sides are smaller and arranged in marginal rows. The surface is dull owing to the ground sculpture, which is distinct and consists of a very fine honeycomb. *Abdomen* very dull owing to the ground sculpture, which is extremely close and which is much smaller than that of the scutellum, and is apparently composed of minute punctures, which tend to be oval in shape. The dorsal segments are very finely punctured, the punctures bearing short white hairs, the first and second (visible) segments being sparingly punctured, the others moderately closely punctured. The margin of the raised basal portion of the segments is irregular. The seventh sternite in the male is triangularly excised to the depth of about a quarter of the plate, the triangle being equilateral; most of the excision is filled with a membrane which is emarginate in the centre. *Legs* with the anterior tarsi (male) strongly dilated, the anterior tibiae with about six very short spines on the external edge, and punctured and thickly fringed with short golden pubescence on the inner side. The intermediate and posterior tibiae have several rows of longer and more numerous spines, and are pubescent beneath as in the anterior tibiae, especially towards the apex. The intermediate tarsi have the first and fifth segments equal, and much longer than the others, which are slightly decreasing in length. In the posterior tibiae, the first and fifth segments are long and equal, the second is slightly longer than the third, and the fourth is considerably shorter.

The anal segment is shining, impunctate, but with a distinct transverse ground sculpture, more remote than elsewhere on the insect. In the aedeagus, the shape of the paramere can be seen from Fig. 4; it is fringed at the apex with very short hairs, there being two longer hairs at the tip. On its inner face it is studded with pegs in a long patch in the middle, the arrangement of which can be seen in Fig. 5. The median lobe, on its outer side, is more or less parallel-sided, and broad at the apex, but is not strongly chitinized on this surface, and in a dried specimen is indefinable in shape. On the inner face, however, the outline is clear, and it is evenly narrowed to a point at the apex (Fig. 6).

Length 28 mm.

In general appearance the species is like *T. purpuripennis* Bernh., but can easily be distinguished by the puncturation of the thorax, which in that species consists of two dorsal series.

Type (♂, unique): PERU: Junin, Sani Beni, 21.x.1935 (*F. Woytowski*).

CORRIGENDUM.

On page 127, line 13, the date of Mannerheim's work should be 1831, not 1837, as printed.

88 Station Avenue,
W. Ewell.
March 17th, 1939.

Polygonia c-album L. (*Lep.*) *in Hampshire.*—A fresh-looking male of the hibernated autumn brood of *P. c-album* L. was seen in the garden as early as February 19th, a pleasant spring day. A fine female of the summer brood, var. *hutchinsoni* Robs., was out, here on July 7th.—F. H. HAINES, Linwood, Ringwood, Hants: *July 11th*, 1939.

Odontaeus armiger Scop. (*Col.*, *Scarabaeidae*) *in Hants.*—At 7.30 on the evening of July 11th, 1939, I took a female of the black form of this rare beetle flying within a foot of the ground in a meadow at Ampfield, near Romsey. There were a number of mushrooms growing in the field and 600 lb. had been gathered there during the previous year.—B. M. HOBBY, 7 Thorncliffe Road, Oxford: *July 16th*, 1939.

Colonisation of new areas by water-beetles.—An opportunity for a short but interesting series of observations on the dispersion of water-beetles by air has been unexpectedly provided by the establishment this summer of a small open-air canvas tank in my garden, with no higher scientific purpose than the amusement of children in hot weather. The tank was set up on the evening of June 29th. It is of strong green canvas, five and a half feet across and about a foot deep. It is filled with tap water, presumably quite free from any large insect life, and the water is so clear against the clean canvas that it is an easy matter to see and to collect any visitors. To my astonishment there were over a hundred water-beetles (Dytiscidae and Hydrophilidae) present when I inspected it twenty-four hours later, the vast majority being *Helophorus brevipalpis* Bed. It seemed well worth while to keep a record of the visitors, and this was done for a week, with the results appended below.

The list given is complete for all the species except *H. brevipalpis* Bed., which was in great numbers, not only on the canvas and the surface of the water (where some of them failed to find a footing and were ultimately drowned) but also flying freely. The numbers given below are the numbers of those taken and identified, so far as I can understand that genus. All the specimens showed the characteristic palpi, but in a few the punctures of the striae were much coarser than in the others.

My garden is a long way from water, about half a mile from the River Cherwell and as far from any known cattle-troughs. There may, of course, be water-butts in neighbouring gardens unknown to me, but there is certainly no natural habitat for these insects at all. The one running ditch near at hand has been dry all the summer. It is thus clear that the species concerned fly very freely in suitable weather. Such observations as I was able to make showed that a considerable part of the movement, so far at least as the species of *Hydroporus* were concerned, took place in the afternoon and evening.

The weather was for the most part variable, with a fair amount both of sun and wind. The wind was at first from the north and then, from July 2nd onwards, from the south-west. There was little rain, but a thunderstorm during the night of July 4th caused a considerable fall of temperature on July 5th, and July 6th was a day of almost unceasing heavy rain. The tank was emptied on July 7th, and observations could not be continued.

Of the species taken, *H. brevipalpis* Bed. is not recorded as the commonest member of the genus locally, but that is probably only a matter of identification. *Hydroporus memnonius* Nic. is not very common about Oxford. It was interesting that the second specimen was the dull form of the female, var. *castaneus* Aub. *Limnebius truncatellus* Thunb. was an unexpected visitor, not locally very frequent. The two specimens of *Ochthebius impressus* Marsh., though certainly of that species, were about as unlike as two specimens of one species can be, one being a narrow specimen of the typical bronze-black, and the other much broader, much more coarsely sculptured, and a dead jet black. Both forms, however, are represented in the Hope Collection, though the latter is apparently much less usual.

Finally, a single Hemipteron appeared, *Arctocorisa nigro-lineata* Fieb. This very common species is, curiously enough, not recorded for Oxfordshire by Butler, but has occurred at Shotover (W. Holland).

The full record for the week is as follows (the numbers of *H. brevipalpis* Bed. being merely the samples taken for identification):

		June 30	July 1	July 2	July 3	July 4	July 5	July 6	Total
DYTISCIDAE:	*Hydroporus memnonius* Nic.				1	1			2
	Hydroporus pubescens Gyll.	1	2		6	4	1		14
	Hydroporus planus F. ...	6	5		8	5	3	1	28
	Hydroporus tesselatus Drap.		1		1				2
	Agabus bipustulatus L. ...	1							1
HYDROPHILIDAE:	*Limnebius truncatellus* Thunb.			1					1
	Helophorus brevipalpis Bed.	11	10	15	10	14	7		67*
	Ochthebius impressus Marsh.			1			1		2
HEMIPTERA.									
CORIXIDAE:	*Arctocorisa nigro-lineata* Fieb.						1		1

* See remarks above. The full number may have been 200-300.

L. W. GRENSTED, Oriel College, Oxford: *July 17th*, 1939.

BRUCHUS LOTI PAYK. (COL.) AND ITS ABERRATIONS.

BY HORACE DONISTHORPE, F.Z.S., F.R.E.S., ETC.

In 1921 in a paper on *Bruchus rufipes* Hbst., after having dealt with the typical form, I added to the British list a rare aberration, ab. *apicatus* Rey, taken by me at Padstow, and described an entirely melanic form, ab. *melanarthrus* Donis., taken by me at Hanwell. I am now describing two new aberrations of the local but more common *Bruchus loti* Payk., and introducing a so-called variety to the British list. On May 31st, 1939, I was sweeping in an extensive field at Northwood, Middlesex, and swept from buttercups, *Ranunculus acer* L. (Meadow Crowfoot) and *Cardamine pratensis* (Milkmaids) a number of Bruchi; I also beat some from hawthorn blossoms. I took these to be *B. loti* Payk., and a black-legged species, possibly *B. villosus* F. On setting them later, however, I found that they were all forms of *B. loti*, and that only a fourth consisted of the typical form.

Paykull (1800) described the species as follows: 'II. BR. Loti *niger, griseo-pubescens, antennarum basi pedibusque anticis rufo-testaceis, femoribus posticis dentatis. Habitat in floribus Loti corniculati in Uplandia mense Julio.*' In his extended description he says that the first four joints of the antennae are rufo-testaceous, and the anterior legs, except the base of the femora and tarsi, which, with the other legs, are black. The only variety recorded in the literature is the var. *mülleri* Schilsky, in which the thorax possesses a distinct little tooth in the middle of the sides. Neither Stephens, Mulsant nor Reitter give any colour variation, and Fowler only mentions that the apex of the intermediate femora are sometimes red. I have not seen this form. I have examined the specimens in the British Collection at the British Museum, the late Dr. Sharp's, the late Mr. Champion's, my own and also those in the general collection at the British Museum, and there are no colour variations present in any of them. In the Stephensian Collection there is one specimen of *B. loti* Payk., typical, and one of *B. lathyri* Steph., which is only a small specimen of typical *B. loti.* It is evident, therefore, that any colour variations of this species must be very rare, or otherwise they would have been described or recorded heretofore. I may mention I have searched the pages of the *Zoological Record* to date.

B. loti belongs to the group with no very distinct teeth to the thorax, and with the posterior femora armed with a strong tooth.

In the male the intermediate tibiae are armed with two teeth at the apex.

Reitter (1912) writes * '*Laria loti* Pk.' in the fruits of *Lathyrus tuberosus* [Earth-nut Pea], *L. pratensis* [Meadow Pea], *Oxytropis uralensis* [Purple or Hairy Mountain Oxytropis] and *Lotus corniculatus* [Bird's-foot Trefoil], and says it is rare in Germany. The species is found in Central and Southern Europe, Tiflis, Siberia and Trans-Caucasus.

Fowler gives for the British Isles: 'Caterham, Mickleham, Forest Hill, Tonbridge, Darenth, Birch Wood, Claygate, Cowfold, Chatham, Sheerness, Whitstable, Maidstone; Herne Bay; Hastings; Portsmouth district; Isle of Wight; New Forest; Glansvilles Wotton; Bristol; Bewdley Forest; Trench Woods; Hertford; Rudham, Norfolk; Doverscourt.' It is also recorded from the Oxford district (Walker, 1908), the Isle of Sheppey (Walker, 1932), Glamorgan (Tomlin, 1936), Braunton (Blair, 1931), Cambridge (Donisthorpe, 1938) and Suffolk [rare] (Morley, 1899). I have taken it in the Windsor area from May to August by beating Hawthorn blossoms and commonly off *Lathyris pratensis*, but have never taken any varieties.

British varieties of *B. loti* Payk.:—

B. loti Payk. v. *mülleri* Schil.—Thorax with a distinct little tooth in middle of sides. I possess a specimen taken at Blackgang, Isle of Wight, 6.vii.94, and one taken at Northwood belonging to this variety; both typical in other respects. Other specimens show a tendency towards it.

B. loti Payk., ab. **ireneae** ab.n.—In this aberration only the apex of the anterior femora and tibiae are testaceous, the rest being black. The base of the antennae are also dark, showing very faint traces of red. Named in honour of Miss Irene Kirk, who introduced me to the collecting ground at Northwood and was with me at the time of capture. A fair number of specimens occurred. Type in Coll. Donisthorpe in the British Museum (Nat. Hist.).

B. loti Payk. ab. **holomelaenus** ab.n.—In this form the whole insect is entirely black. Named from several specimens taken at Northwood. Type in Coll. Donisthorpe in the British Museum (Nat. Hist.).

On June 27th another visit was paid to Northwood, when the *Bruchus* was found to be present in numbers, some on the buttercup again but more plentiful on *Lathyrus pratensis*, a large crop of which occurred in one part of the meadow. The typical form was the most abundant, and next the ab. *ireneae*.

---

* Both Winkler, and Pic, in Junk, used the name *Bruchus* L., and not *Laria* Scopoli for the genus. The latter author unfortunately gives the page for the original description in the Fauna Suecica as '13' instead of 158.

REFERENCES.

BLAIR, K. G. 1931. The beetles of the Scilly Islands. *Proc. Zool. Soc. Lond.*, **1931** : 1243.

DONISTHORPE, H. ST. J. K. 1921. *Bruchus rufipes* Hbst. ab. *apicatus* Rey, a British insect, with some notes on the type-form, and other aberrations. *Ent. Mon. Mag.*, **57** : 31-34.

———— 1938. Coleoptera. *In* Imms, A. D., Zoology of Cambridgeshire. *Victoria County Hist. Cambs.*, **1** : 133.

FOWLER, W. W. 1890. *The Coleoptera of the British Islands.* London. **4** : 263.

MORLEY, C. 1899. *The Coleoptera of Suffolk.* Plymouth. 78.

MULSANT, E. 1858. *Opuscules Entomologiques.* Paris. **8** : 38, pl. 3, fig. 17.

PAYKULL, G. VON. *Fauna Suecica.* Upsaliae. **3** : 158.

PIC, M. 1913. Bruchidae. In Junk, W., *Coleopterorum Catalogus,* **26** (55) : 32

REITTER, E. 1912. *Fauna Germanica.* Stuttgart. **4** : 220.

SCHILSKY, J. 1905. In Küster, *Die Käfer Europas.* Nürnberg. **41** : 16.

TOMLIN, J. R. LE B. 1936. *In* Hallett, H. M., Insects of Glamorgan. *Glamorgan County History*, **1** : 358.

WALKER, J. J. 1908. First supplement to the preliminary list of the Coleoptera of the Oxford district *Rep. Ashmol. Nat. Hist. Soc.*, **1907** : 57.

———— 1932. An annotated list of the Coleoptera of the Isle of Sheppey. *Trans. Ent. Soc. S. Engl.*, **7** (2): 125.

WINKLER, A. 1929. *Catalogus Coleopterorum Regionis Palaearcticae.* Vienna. 1361.

Department of Entomology,
British Museum (Nat. Hist.),
Cromwell Road, London, S.W.7.
June 29th, 1939.

Further notes on Pyropterus affinis Payk. (Col., Lycidae).—I am now able to add a few further particulars to my previously published account of this species (*antea*, p. 164). A friend who was with me botanising tells me the tree was a silver birch, he noted it at the time as he took a special moss on it. The five specimens reared were all males. I observed that these made no attempt to leave the wood in which they had lived, and when disturbed retired into it as soon as possible. Whether this is a habit common to both sexes, or is confined to the male, is a question worthy of attention. Nor do we know the relative proportion of the sexes. It may be that, like the Ptinidae, the males are in excess of the females, emerge some days before them, and wait about for their appearance. I conclude that the species is not really so rare as is generally supposed, and that a little intensive wood work in the early part of the year would discover the larva in many districts hitherto not associated with the species.—E. G. BAYFORD, 16 Rockingham Street, Barnsley: *June 26th*, 1939.

Tortrix viridana L. (Lep.) in the New Forest.—There is a marked sprinkling of *T. viridana* L. in parts of the Forest this season. The numbers, however, are not sufficient to make it a menace to the oaks as in some years.—F. H. HAINES, Linwood, Ringwood, Hants: *July 11th*, 1939.

NOTES ON AMERICAN ELMIDAE, WITH DESCRIPTIONS OF NEW SPECIES (COLEOPTERA).

BY H. E. HINTON, PH.D.

In this paper two recently described species are relegated to synonymy, the range of a Costa Rican species is extended to Ecuador, and two new species are described. All illustrations were made by myself with the aid of a camera lucida. Lines next to figures refer to a length of 0·20 mm.

There has recently come to my attention a contribution by Hatch (1938) to the taxonomy of the Elmidae in which he describes two new species. Not only are both of these referred to genera to which they do not belong, but both, as nearly as can be judged from his inadequate descriptions, are synonyms of well-known western American species.

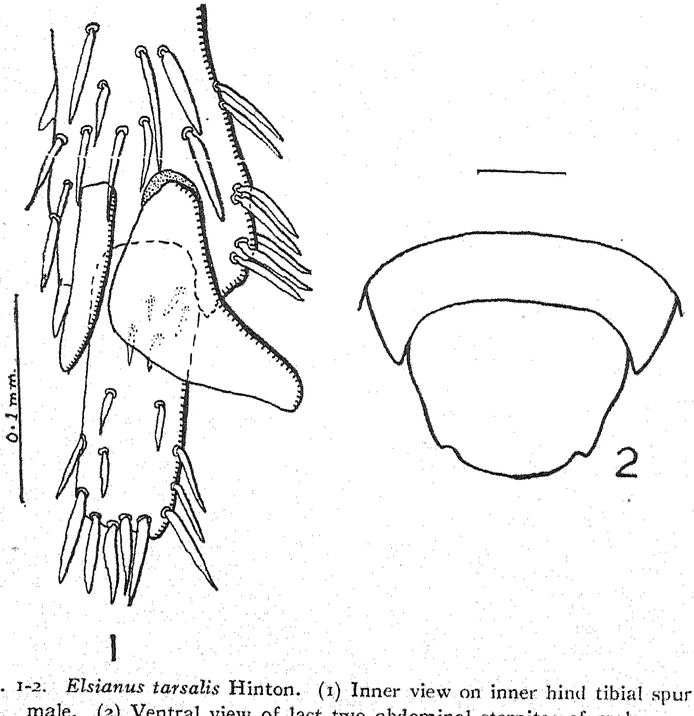
On pages 16-17 (*op. cit.*) *Heterelmis browni* is described, and a figure of the whole insect is given. This figure is one of a typical species of *Microcylloepus* Hinton (1935), probably *M. pusillus* (Lec.). The essential differences between *Microcylloepus* and *Heterelmis* are as follows :—

Microcylloepus.	*Heterelmis.*
1. Alimentary canal with two caeca on the anterior margin of the mid-gut.	1. Alimentary canal with six caeca on the anterior margin of the mid-gut.
2. Female reproductive system with six egg tubes to each ovary.	2. Female reproductive system with eleven egg tubes to each ovary.
3. Central nervous system with the first three abdominal ganglia discrete, and four to eight partly fused together, though the limits of each are distinguishable.	3. Central nervous system with the first six abdominal ganglia discrete, and seven and eight only partly fused together.
4. Body usually subparallel.	4. Body usually subovate.
5. Epipleura usually without tomentum.	5. Epipleura always tomentose.
6. Hypomera without tomentum.	6. Hypomera always with a ventral belt of tomentum.
7. Pronotum always with a transverse impression at apical two-fifths and always with a median longitudinal impression.	7. Pronotum frequently without a transverse impression, but if present it is on middle. Disk frequently without a median longitudinal impression.
8. Each elytron with one or two sublateral carinae.	8. Each elytron always with two sublateral carinae.
9. Second anal of hind wing with only the first and third branches present.	9. Second anal with first, second, and third branches present.
10. Prosternal process narrow.	10. Prosternal process very broad.

The differences between the larvae of the two genera may be summarised as follows :—

Microcylloepus.	*Heterelmis.*
1. Head without a distinct fronto-clypeal suture.	1. Head with a well-developed fronto-clypeal suture.
2. Anterior margin of head on each side between base of antenna and clypeus without a distinct tooth.	2. Anterior margin of head on each side between base of antenna and clypeus with a' well-developed and acute tooth.
3. Tubercles forming longitudinal rows on dorsal surface of body give rise only to fine setae so that surface does not appear longitudinally carinate.	3. Tubercles forming longitudinal rows on dorsal surface give rise to large and stout setae so that under low magnifications the surface appears longitudinally carinate.
4. Mesopleura divided into two parts on each side.	4. Mesopleura divided into three parts on each side.
5. Metapleura divided into two parts on each side.	5. Metapleura divided into three parts on each side.

In his comparative notes of *Heterelmis browni,* Hatch compares it with *nitidula* Lec. and *latiuscula* Lec. If he had looked up the recent literature on the Elmidae he would have known that



FIGS. 1-2. *Elsianus tarsalis* Hinton. (1) Inner view on inner hind tibial spur of male. (2) Ventral view of last two abdominal sternites of male.

nitidula was a synonym of *latiuscula* which belonged in the genus *Limnius* Er. and not *Heterelmis* Sharp (Hinton, 1936A).

On page 18 (*op. cit.*) *Macronychus thermae* is described. This species should be referred to the genus *Zaitzevia* Champ. (*vide* Hinton, 1936B), where it appears to be a synonym of the widely distributed *Z. parvulus* (Horn).

Elsianus tarsalis Hinton (1936).

(Figs. 1-2.)

This species was described from a unique male from Costa Rica sent to me many years ago by the late Mr. F. Nevermann. Among some unnamed material in the collection of the British Museum, a male and female were recently discovered. Both specimens are from Ecuador: Cachabè, xii.1896 and i.1897 (*Rosenberg*).

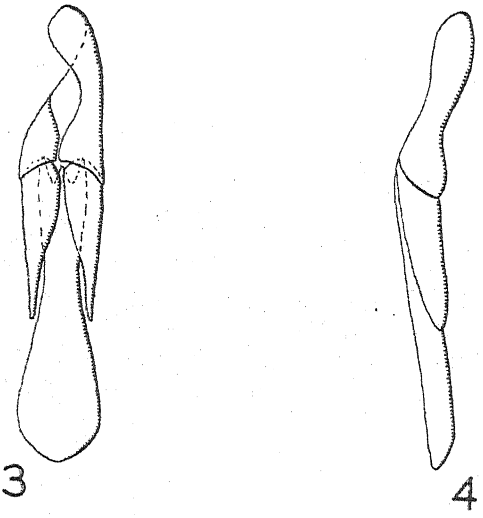
The female differs externally from the male as follows: (1) The labrum is slightly less densely clothed with the long and golden-testaceous hairs; (2) the metasternum has no patch of dense, recumbent, golden-testaceous hairs on each side of middle at anterior two-fifths; (3) the apical abdominal segment has the posterior margin more narrowly rounded than that of the male (Fig. 2), is less strongly convex, and the apical region is not densely clothed with long, fine hairs; (4) the first segment of the middle tarsus has not the stout spines at inner apex; and (5) the moderately transverse inner spur of the hind tibia is much shorter (0·065 mm. : 0·10 mm.) and narrower than that of the male (Fig. 1).

Hexacylloepus frater sp.n.

(Figs. 3-4.)

Male: Length, 1·86 mm.; breadth, 0·80 mm. Cuticle brown to brownish-testaceous and for the most part very finely alutaceous.

Head without distinct impressions; surface with round, flat-topped granules which are not quite as coarse as facets of eyes and are usually separated by two diameters. Clypeus with the fronto-clypeal suture distinct and nearly straight; anterior margin broadly and arcuately emarginate for entire breadth, with angle on each side broadly rounded; surface sculptured like that of head but with granules slightly denser. Labrum with anterior margin feebly and broadly rounded, angle on each side very broadly rounded; surface without distinct granules but with very fine punctures (one-third to half as coarse as cephalic granules) which are separated by about one to two diameters; surface on basal third with the alutaceous microsculpture arranged transversely. *Pronotum* across broadest point, which is at basal two-fifths, slightly broader than long (0.65 mm. : 0.57 mm.) and base broader than apex (0.60 mm. : 0.46 mm.). Sides arcuate and broadly and feebly sinuate before basal angles. Lateral margins finely and regularly crenate. Sublateral carinae prominent, feebly converging towards apex, moderately sinuate on basal half, and obsolete at about apical fifth. Disk with median impression narrow (at broadest 0.04 mm.) and extending from basal fourth or less nearly to apex. Surface sculptured like head but with granules slightly coarser and often feebly oblong. *Elytra* about twice as long as pronotum (1.37 mm.: 0.57 mm.) and feebly widening posteriorly to broadest point at apical third which is 0.79 mm. Lateral margins finely and regularly crenate, the crenations being due to fine lateral granules. Inner sublateral carina, particularly apically, slightly more conspicuous than outer. Surface with the striae feebly impressed and all except sutural obsolete beyond apical sixth; basal strial punctures subquadrate to round, deep, a half to as broad as intervals, and separated longitudinally by half to one and a half diameters; these punctures become finer and shallower towards apex and on apical fifth are only half to two-thirds as broad as discal ones. Intervals flat or nearly so, with fourth interval on basal fourth moderately convex so that it is as prominent as inner sublateral carina on same region; surface of intervals microscopically and moderately sparsely alutaceous and also with numerous very fine punctures; surface at base and basal sides with round granules similar to those of pronotal disk and distinctly smaller than those of carinate intervals. *Scutellum* flat, subovate, longer than broad (0.109 mm.: 0.06 mm.), feebly rounded at base, and narrowed to and acute at apex; surface distinctly smoother than adjacent parts of elytra. *Prosternum* with the process feebly concave and with its lateral margins feebly raised; surface of prosternum feebly rugose and with granules about as coarse as those of disk of pronotum. Hypomera sculptured as sides of prosternum; with the band of tomentum extending to anterior margin where it is about a fifth as broad as broadest point of hypomera. Metasternum with the median impressed line extending to anterior fourth; disk feebly concave, sculptured like prosternum but with the granules and rugae more regular; sides less rugose but with the granules sparser. Abdomen more finely but similarly



FIGS. 3-4. *Hexacylloepus frater*, sp. n. (3) Dorsal view of male genitalia. (4) Right lateral view of same.

sculptured to metasternum; first sternite moderately depressed and with the lateral carinae extending to second sternite. *Legs* with the length of the femora and tibiae as follows: front, 0.41 mm. and 0.43 mm.; middle, 0.41 mm. and 0.43 mm.; and hind, 0.43 mm. and 0.49 mm. Middle tibia with a row of fine spines on ventral side. *Genitalia* as figured (figs. 3-4).

Female: Unknown, or if before me cannot be separated from females of related species.

Type: A male in the collection of the British Museum (Nat. Hist.). Brazil: Santa Catharina, Nova Teutonia, 1936 (*F. Plaumann*).

Paratypes: Two males with same data as type.

Variations: One of the paratypes has the body black and the fourth elytral interval on basal region is distinctly less elevated than inner sublateral carina, though it is more elevated than neighbouring intervals.

Comparative notes: The structure of the male genitalia is nearest to that of *H. abdominalis* (Hinton) (*Cylloepus*), though on other characters it seems to be most nearly related to *H. plaumanni* (Hinton) (*Cylloepus*). Apart from the genitalia, it may be distinguished from *H. abdominalis* as follows: (1) Median discal impression of pronotum narrower and extending from basal fourth or less, whereas in *abdominalis* it extends from basal third; (2) the fourth elytral interval on basal region is as convex as inner sublateral carina, whereas in *abdominalis* the fourth interval is nearly flat; (3) the median basal part of the first abdominal sternite is without a fine carina; and (4) there is no apical depression on last abdominal sternite.* From the males of *H. plaumanni* it differs in not having the surface between the granules on either side of the metasternal discal impression smooth and polished.

Hexacylloepus heterelmoides sp.n.

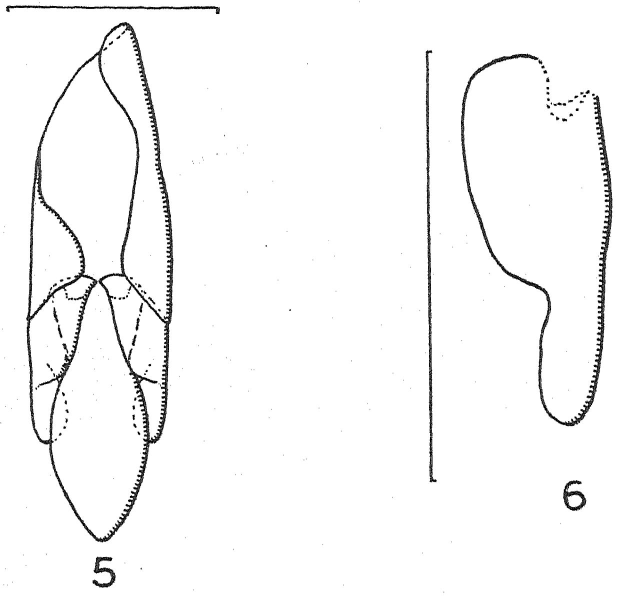
(Figs. 5-6.)

Male: Length, 1·75 mm.; breadth, 0·87 mm. Obovate, strongly convex. Cuticle strongly shining, brownish-piceous; antennae, mouth-parts and legs testaceous.

Head without distinct impressions; surface densely alutaceous and with numerous granules which are oblong and slightly finer than facets of eyes. Clypeus with the fronto-clypeal suture very indistinct, nearly straight; anterior margin arcuately and moderately strongly emarginate for its entire breadth and with angle on each side obtusely rounded; surface sculptured like that of head but without distinct granules. Labrum with the anterior margin broadly and very feebly arcuately emarginate and with angle on each side broadly rounded; surface with numerous very fine punctures. *Pronotum* across broadest point, which is at basal two-fifths, broader than long (0.68 mm. : 0.54 mm.) and base broader than apex (0.63 mm. : 0.43 mm.). Sides strongly arcuate and very feebly sinuate before basal angles; lateral margins finely and irregularly crenate. Sublateral carinae moderately prominent, inner sides rather sharp, and feebly sinuate on basal half. Disk with median impression confined to middle, moderately shallow, oval (0.68 mm. broad and 0.13 mm. long). Surface near and on bottom of median impression with punctures about two-thirds as coarse as facets of eyes and confluent to separated by one diameter; elsewhere on disk, except anteriorly near sublateral carinae, with the punctures slightly coarser and usually separated by two diameters, the surface between punctures being smooth and polished; sides between sublateral carinae and lateral margins similarly and nearly as densely punctate as bottom of median impression, anterior half with round granules slightly coarser than facets of eyes and separated by one to two diameters, posterior half with a few much larger, low, oblong granules. *Elytra* more than twice as long as pronotum (1.20 mm. : 0.54 mm.) and broadest point across humeri much narrower than broadest point which is at apical two-fifths (0.87 mm. : 0.68 mm.). Lateral margins very finely crenulate. Inner and outer sublateral carinae about equally prominent. Striae very feebly impressed; strial punctures on disk round, fine, shallow, half as broad as intervals, and separated longitudinally by two diameters. Intervals with fourth on basal fourth feebly convex and with a single row of large round granules like those of sublateral carinae; surface of intervals feebly alutaceous and with fine punctures (as fine as those of pronotum) separated usually by five diameters; basal intervals, particularly at sides, with round granules about two-thirds as coarse as those of carinae. Scutellum flat, nearly round but slightly longer than broad (0.10 mm. : 0.09 mm.), and surface sculptured as adjacent elytral intervals. *Prosternum*

---

* This character was omitted by me in the original description of the male of *H. abdominalis* Hinton.



FIGS. 5-6. *Hexacylloepus heterelmoides*, sp. n. (5) Dorsal view of male genitalia. (6) Dorso-lateral view of right paramere of same.

with the process rather broad (0.17 mm) between coxae and with sides feebly elevated; surface of prosternum feebly rugulose and finely and moderately densely punctate. Hypomera sculptured like prosternum but with a few fine granules; tomentose belt not extending to anterior margin. Metasternum with the median longitudinal line extending to anterior fourth; disk feebly depressed on posterior middle half; surface of disk sculptured like middle area of prosternum; sides of metasternum without granules. *Abdomen* without granules, completely tomentose except for middle region of first and second sternites which is sculptured like metasternal disk. First sternite without lateral carinae. *Genitalia* as figured (figs. 5-6).

Type: A male in the collection of the British Museum (Nat. Hist.). French Guiana: St. Laurent du Maroni, x.1937 (*H. E. Hinton*).

Paratypes: Two males with same data as type.

Comparative notes: This species belongs in a group by itself. Its facies is so unlike that of a typical *Hexacylloepus* and so like that of *Heterelmis* that for some time it was placed in the latter genus in the writer's collection. This difference in appearance from the described members of the genus is due to its obovate and unusually convex body, the absence of granules on the pronotal disc, the very short and rather broad impression of pronotal disc, and the unusually fine elytral strial punctures.

REFERENCES.

HATCH, M. H. 1938. Two new species of Helmidae from a warm spring in Montana (Coleoptera). *Ent. News*, **49**: 16-19, 2 figs.

HINTON, H. E. 1935. Notes on the Dryopoidea (Col.). *Stylops*, **4**: 169-179, 7 figs.

———— 1936*a*. Synonymical and other notes on the Dryopidae (Coleoptera). *Ent. Mon. Mag.*, **72**: 54-58, 2 figs.

———— 1936*b*. Descriptions of new genera and species of Dryopidae (Coleoptera). *Trans. R. Ent. Soc. Lond.*, **85**: 415-434, 43 figs., 1 plate.

Department of Entomology,
British Museum (Natural History),
Cromwell Road, London, S.W.7.

July 10th, 1939.

Sphinx pinastri L. (*Lep.*) *in Hampshire.*—The penetration of *S. pinastri* L. into Hampshire from East Dorset continues. Common in the Bournemouth district of late years, it appeared in 1937 on fir-trees on heathlands to the west of Linwood. I found a female specimen, slightly worn, on an outside door at Appleslade on June 15th.—F. H. HAINES, Linwood, Ringwood, Hants: *July 11th*, 1939.

Vanessa cardui L. (*Lep.*) *in Hampshire.*—A fresh specimen of *V. cardui* L. was seen at Mogshade, in the New Forest, on June 8th. A rather worn and faded specimen was watched on Ibsley Common on June 12th.—F. H. HAINES, Linwood, Ringwood, Hants: *July 11th*, 1939.

Society.

ENTOMOLOGICAL CLUB.—A meeting of the Entomological Club was held at the Burford Bridge Hotel, Box Hill, Surrey, on May 19th, 1939, Mr. W. Rait-Smith in the Chair.

Members present in addition to the Chairman: Mr. H. Donisthorpe, Mr. H. Willoughby Ellis, Mr. Jas. E. Collin, Dr. Sheffield Neave, Dr. Richard R. Armstrong. Visitors present: Mr. E. C. Bedwell, Mr. H. M. Edelsten, Mr. F. W. Frohawk, Dr. Karl Jordan, Mr. W. J. Kaye, Rev. J. Metcalfe, Capt. N. D. Riley, Mr. W. H. T. Tams.

The members and guests arrived from 12.30 onwards and luncheon was served at 1.15 in the large restaurant. After luncheon a walk over the Box Hill district in fine weather was very pleasant and the well known views were thoroughly enjoyed. This district, rich in memories of Stainton, is perhaps one of the most interesting entomological districts near London, and almost every entomologist has recollections of interesting captures from time to time. The party returned to the hotel about 5 o'clock, when tea was provided, and the party broke up between 6 and 7 o'clock in the evening after an interesting day.—H. WILLOUGHBY ELLIS, *Hon. Secretary*.

Reviews.

'NOMENCLATOR ZOOLOGICUS. A list of the names of genera and subgenera in Zoology from the tenth edition of Linnaeus, 1758, to the end of 1935.' Edited by SHEFFIELD AIREY NEAVE, O.B.E., D.Sc. (OXON), F.Z.S. Vol. I, A—C. 9⅞ in. × 6⅝ in. Published for the Proprietors by the Zoological Society of London, 1939. Price £8 8*s*.

The lengthy title of the work under review sufficiently indicates its scope. The necessity for a new 'Nomenclator Zoologicus' arose through the vast number of generic names, about 2,000, which are coined from year to year, especially since 1850, when Sherborn's great work, 'Index Animalium,' closed. It was a suggestion by Dr. Neave to Sir Peter Chalmers Mitchell in October, 1934, which caused the present publication to be undertaken, and the work was started soon after, in January, 1935. The cost of preparation and printing was borne by the Zoological Society, the Carnegie Corporation, the Royal Society and by an anonymous donor, whilst Dr. Neave himself and his friend, Mr. R. W. Lloyd, made themselves responsible for the cost of production. The Editor gratefully acknowledges the help of many specialists, British and foreign, but he has a special word of thanks for his Chief Assistant, Miss Rachel Davenport. The 1st Volume, letters A to C, is now ready, whilst the remaining three Volumes are to be issued at intervals of about six months.

The total work of four Volumes is estimated to contain more than 225,000 entries, in which insects outnumber the whole of the rest of the animal kingdom. The specimen copy sent to us for review is part of letter B, of nearly 100 pages, with about 60 entries per page. The printers are Richard Clay & Co. Ltd., who are to be congratulated on the excellency of the letterpress.

To close this short review with a stereotyped phrase like, 'This is a book which can be recommended to every scientific library,' would be the limit of impudence. The work, covering a period of 177 years, is the result of the efforts of about seventy of the most eminent zoologists of the day, and everyone who has ever attempted systematic zoology will be amazed at the amount of labour bestowed upon it and will be grateful for the way in which the 'Nomenclator Zoologicus' will lighten his own labours.—R. HANITSCH.

'AN INTRODUCTION TO MODERN GENETICS.' By C. H. WADDINGTON, Sc.D. 441 pp., 5 pls., 160 figs., 8vo. Published by George Allen & Unwin, Ltd., London. 1939. Price 18/-.

This attractively produced work is an up-to-date guide to the rapidly developing subject of genetics, to an understanding of which insects, and in particular the fruit fly *Drosophila*, have so largely contributed. A special feature of the book is the consideration given to the inter-relationship of genetics and other branches of biology and many problems of great interest to entomologists receive attention, *e.g.* parthenogenesis, sex determination, gynandromoyphs, intersexes, pattern, nature of taxonomic differences, species, sub-species and races, variation and natural selection. The work is divided into five parts; the first comprises an account of the fundamentals of Mendelism and of the chromosomes and their behaviour, the second deals with the question of how genes affect developmental processes, the third discusses the relationship between genetics and evolution, the fourth is concerned with genetics and human affairs, while the fifth and concluding part speculates on the nature of the gene.

'A CONTRIBUTION TO THE BIOLOGY OF NORTH AMERICAN VESPINE WASPS.' By PROF. C. D. DUNCAN, PH.D., Stanford University Publications, University Series, Biological Sciences, vol. 8, No. 1, 272 pp., 54 pls., Royal 8vo. Published by Humphrey Milford, Oxford University Press, London. Price 15/-.

Many years of personal observation, both in the field and in the laboratory, have enabled the author to produce a mine of information about these familiar insects. His detailed account of the morphology of *Vespa pensylvanica* (Sauss.) occupying 72 pages and illustrated with 32 excellent plates is such a thorough study that it is likely to remain a classic for a long time. The biological section of 78 pages, illustrated with 22 plates, includes valuable accounts of the seasonal history of a wasp, hibernation, foods, feeding behaviour, building activities, life history and metamorphosis, and will have an even wider appeal.

Editorial.

We regret to announce the death, on July 10th, of Dr. Walther Horn, Director of the Deutsches Entomologisches Institut of the Kaiser Wilhelm-Gesellschaft at Berlin-Dahlem. It is hoped to publish a biographical notice in the next number.

Note on Anthrenocerus australis Hope (Col., Dermestidae).—Early in May, 1939, larvae from cultures in the Imperial College Stored Products Laboratory insectaries were sent to Dr. van Emden at the British Museum (Natural History). These cultures were labelled *Anthrenus* sp., but the larvae more closely resembled those of *Trogoderma granaria* Everts and *T. versicolor* Creutz. than *Anthrenus*. Rubbed specimens of dead adults present in the cultures differed from these genera in the antennal club. Dr. van Emden stated that the larvae were not *Anthrenus* but were probably a species of *Trogoderma* or a near genus. Adults appeared towards the end of May and these were sent to Mr. Arrow at the Museum, being identified by him as *Anthrenocerus australis* Hope. From the stock records it appears that these cultures were started from larvae found at a London wharf in July, 1933, on hides (origin not given). Thus the original specimens were found at about the same time as Mr. S. Wakely recorded the species at Finsbury (1936, *Ent. Mon. Mag.*, **72**: 174-5). The insect is bred in the insectary on fishmeal and flannel.—R. HOWE, B.Sc., A.R.C.S., Imperial College of Science, Biological Field Station, Slough, Bucks: *July 18th*, 1939.

NOTES ON BRITISH COLLEMBOLA.

BY RICHARD S. BAGNALL, D.SC.

This is the fifth part of the series and is continued from *Ent. Mon. Mag.*, LXXV, pp. 91-102 (1939).

The following are, to the best of my knowledge, new to the British fauna: *Friesia poseidonis* sp.n. with var. *tumidicornis* nov., f. *quadrispina* nov., f. *tetracanthella* nov. and f. *inermis* nov., *Pseudachorutus dubius* Kr., *P. parvulus* Börn., *Xenyllodes armatus* Axels. with f. *unispina* nov., *Anurida denisi* Bagn., *Aphoromma thalassophila* sp.n., *Paranura sexpunctata* var. *clavisetis* Börn., *Isotomodes templetoni* sp.n., *Archisotoma nigricans* sp.n., *Pseudosinella petterseni* Börn. and *P. halophila* sp.n. *Xenyllodes cavernicola* Womersley is definitely not referable to that genus, so the genera *Xenyllodes* and *Paranura* are both additions to our fauna. In regard to *Anurida* and its allies, I have clearly diagnosed the genera *Anurida, Aphoromma* and *Anuridella,* and the last-named should never again be referred to either *Anurida* or *Aphoromma.*

Friesia poseidonis, Anurida denisi, Aphoromma thalassophila, Archisotoma nigricans and *Pseudosinella halophila* further increase our rapidly growing knowledge of halophilous Collembola, and *Xenyllodes armatus,* herein recorded from the shores of Lough Neagh, would appear from its Finnish records to be a littoral form falling into the same category as *Anurida tullbergi.*

Isotomodes templetoni is named in memory of Robert Templeton, who over a hundred years ago published his *Thysanurae Hibernicae* in the first volume of the Transactions of the Entomological Society of London (1834).

In collecting *Anuridella submarina* from its type locality at Whitburn, I discovered with it *A. immsiana* m. and *Archisotoma nigricans* sp.n., and as my old 'Roker' records of *Anurida denisi* m. set out herein are from the same rocky stretch and open to the fury of the North Sea we have here an unexpected El Dorado of rare halophiles.

Again my grateful thanks are due to Mr. Litster, whose unbounded energies are helping me considerably in the elucidation of our Collembolan fauna.

Subfamily PSEUDACHORUTINAE.

The subfamily may be split into two sections with convenience.

SECTION I.

This group comprises a section of the Pseudachorutinae in which (so far as the known British species are concerned) (*a*) the furca and tenaculum are present, (*b*) the empodial appendage is absent except in *Xenyllodes*, (*c*) the anal horns are present or absent and may number 3 (as in *Friesia*) or be represented by a number of backwardly directed spines (*Polycanthella*), and (*d*) the ommatidia number 8 + 8 in all the British species excepting *Xenyllodes*, wherein they number 5 + 5. The PAO may be absent (*Friesia* and *Polycanthella*) or present (in all species of *Pseudachorutes* except *asigillatus* and in *Xenyllodes*, wherein it assumes an unusual trilobed form. Tenent hairs may be present or otherwise.

Xenyllodes cavernicola Womersley (1930, *Ent. Mon. Mag.*, LXVI, p. 33, figs. 1-6) cannot be referred to the genus, nor yet, in my opinion, to the family. If we can assume that his figure of the maxilla head is in reality the apex of the mandible, then the species would be referable to the *Hypogastrura* group, and we must remember that *H.* (*Mesogastrura*) *libyca* (Caroli) has 5 + 5 ommatidia and other species a less number or none. Further, it is a group in which many species have been described from caves.

Friesia claviseta Axels.

Length 0·7-0·8 mm. Colour lighter or darker blue, rarely violet. Knobbed setae of terminal body segments *c.* 2·0 times the length of the sub-distal pairs of AH and 1·5 times the length of Claw III. Furca with vestigial mucrodens at apex. Tibio-tarsus with 3-5 knobbed tenent hairs.

NORTHUMBERLAND, Wooler, violet examples in *Sphagnum*, 1912; Alnmouth, under bark of stump embedded in muddy estuary, iv.37, and a violet example under bark of drift log, iv.39. DURHAM, Gibside, under bark of beech, 3.ix.10, and of other trees thereafter; Cox Green, iv.12; St. John's Chapel, violet examples in *Sphagnum* on the moors at 1,500 feet. E. YORKS, Ravenscar, under bark, ix.1910; Sewerby and Boynton Woods, v. and vi.34 and vii.39. BEDS., Luton, under bark of elm, 27.v.34. ESSEX, Epping Forest at Chingford and Loughton, 1912 onwards.

Also several records from IRELAND (*Litster*) and SCOTLAND.

The following littoral species belongs to the *mirabilis* group in which the ommatidia number 8+8, the body bristles are pointed and the foot is without tenent hairs. It can, therefore, only be compared with *mirabilis* Tlb.

Friesia poseidonis sp.n.

Length 0·8-1·2 mm. (usually *c.* 0·9-1·0 mm.). Pale, more or less shaded dorsally with pale to deep grey-blue (in exceptional cases), the head as a rule darker than the rest of the body and the antennae and legs usually pale.

Body setae pointed, up to Abd. III sparse, of two sizes, the smaller 0.4 to 0.5 the length of the longer, which are approximately as long as or slightly longer than claw III. Head, especially anterodorsally, with a number of longish bristles about equal in length to claw III. Bristles of Abd. IV longer than those of III and those of V and VI yet longer, the longest of the longer bristles c.1.5 times the length of claw III and twice the length of the larger AH. Antenna shorter than the head, I and II transverse, III-IV closely connate and narrow; transverse series of long, stiff setae on II, these being longer than the longest of the fine bristles on III and IV. Organs of III typical and IV with 4 or 5 strong curved sensory-rods and retractile terminal knob. Claw without tooth, tibio-tarsal setae short curved, except for a longer straight one which is c.0.7 the length of the claw. AH strong and set on strong papillae—the distal one appreciably smaller than the others (as in *magnicornis* Denis). Tenaculum with rami bidentate and corpus naked. Furca short and much as in *mirabilis* and *claviseta*.

The species has occurred in many localities, always from under stones embedded as a rule in, or lying on, sand or a muddy silt below high-water mark, often with *Aphoromma thalassophila* sp.n. Rarely in numbers.

ENGLAND: NORTHUMBERLAND, Alnmouth, iii.35; Seaton sluice, iii.39; E. YORKS, Ferriby, iv.37; ESSEX, Benfleet, vi.37; S. DEVON, Dittisham, vi.36.

SCOTLAND: Dalmeny beach, frequent, viii.34 onwards; S. Queensferry; Torryburn (FIFE), 15.v.37; head of Loch Long at Ardlui.

IRELAND: Gray Abbey, Strangford Lough, vii.38 (type and paratypes); Hood's Ferry, Island Magee, 5.xi.38; Ballyholme, Bangor, Co. DOWN, 14.ii.37; Portcoon, Co. ANTRIM, 17.ix.38; Cloughey, Co. DOWN, vii.38 (*J. Litster*).

F. poseidonis var. **tumidicornis** nov.

AH strongly swollen basally, flask-shaped. From Dalmeny beach (SCOTLAND) and Ballyholme, Bangor, Co. DOWN, 14.ii.37.

F. poseidonis f. **inermis** nov.

Abd. VI without AH. A large specimen, 1·3 mm. in length, from Grey Abbey with typical examples.

F. poseidonis f. **quadrispina** nov.

With two distal anal horns side by side instead of one, making a total of four.

S. DEVON, Dittisham, vi.36.

F. poseidonis f. **tetracanthella** nov.

With four anal horns, a second smaller one being situated directly above the distal one.

SCOTLAND: Dalmeny Estate, with typical *poseidonis* below high-water mark, x.38.

Pseudachorutes dubius Krausbauer.

1898, Zool. Anz., XXI, Nos. 567-568, p. 504; Axelson, 1912, *Die Apterygoten Finlands,* Pt. II, p. 35.

A large, broad, grey-blue species measuring from 2·0 to just over 4·0 mm. in length; foot without tenent hairs and PAO composed of 13-20 peripheral vesicles arranged in the form of an ellipse. Known from Northern Europe and Germany.

Possible synonyms are ? *Schöttella poppei* Schäffer, 1896, and ? *P. lapponicus* Ågren, 1904.

YORKS : Ravenscar, an example measuring just under 3·0 mm. in length from under bark of pine, ix.10. I also found *P. corticicola* (Schäff.) Kr. and *P. subcrassus* Tlb. at Ravenscar.

Pseudachorutes parvulus Börner.

1901, Zool. Anz., XXIV, Nos. 657/658, p. 701, f. 5; Axelson, 1912, *Die Apterygoten Finlands,* Pt. II, p. 64, Pl. VI, figs. 6-11.

A whitish species of 1·0-1·2 mm. in length; foot without tenent hairs and PAO composed of 6-7 peripheral vesicles arranged in the form of a rosette. The species comes nearest to *P. subcrassus* Tlb., a dark greyish-blue insect that is not rare with us. *P. parvulus* may be found to be not uncommon with us but overlooked as young of *subcrassus.*

SCOTLAND: Roslin, 1.v.37, with *Willemia.* YORKS : Boynton Woods, one from under bark of elm, 20.v.34. Known from the Baltic Provinces, Russia and Germany.

Xenyllodes armatus Axelson.

1903, Acta Soc. F. et Fl. Fenn., 25, No. 7, p. 4; 1905, Festschr. f. Palmén, No. 15, p. 27; 1912, *Die Apterygoten Finlands,* Pt. II, p. 68, Pl. I, f. 4, and VI, figs. 26-34; Handschin, 1929, *Die Tierwelt Deutschlands,* 16, p. 36, figs. 50-52.

This strongly characterised species is closely described by Axelson (1912), according to whom it is a littoral form.

Xenyllodes armatus f. **unispina** nov.

With a single medial anal horn. With the typical form, one only.

IRELAND: Co. ANTRIM, shores of L. Neagh at Toomesbridge, 13.v.39, and elsewhere, 27.v.39. Represented in five out of six tubes of material collected from the shore (*J. Litster*).

SECTION II.

This group comprises a section of the Pseudachorutinae in which (*a*) the furca and tenaculum are absent, (*b*) the empodial appendage of the foot is absent, (*c*) the anal horns are absent, and (*d*) the ommatidia, when present, do not number more than five on each side of the head.

The PAO is present in all the genera excepting *Paranura*, and the peripheral vesicles are arranged in the form of a rosette or a regular or irregular ellipse.

Tenent hairs are unknown in species of this group.

The group includes a large number of true halophiles and all the known species of *Anuridella* and *Aphoromma*, and the known European species of *Anurida* occur with us.

Anurida and allied genera.

In view of the fact that the genus *Anuridella* Will. is regarded by some as synonymous with *Anurida*, I think it advisable to set out clearly the generic distinctions, and further (to simplify the classification) I have also separated *Aphoromma* from *Anurida*.

Houlbert (1924) treated *Aphoromma* as a genus distinct from *Anurida* but treated *Anuridella* as a synonym, whilst Axelson, Folsom and Mills refer to *Anuridella* as a synonym of *Anurida*.

The three genera agree in the trilobed apical antennal organ, the form of the PAO, and in the general form of the maxilla head and its ciliate lamellae. In regard to the maxilla in *Anuridella calcarata* Womersley has followed Denis in describing a medial point (fringed) projecting from the head, but this is in fact one of the lamellae projecting well beyond the apex and is even more strongly developed in *Anuridella immsiana*.

TABLE OF GENERA.

1. Mandible with many teeth and without subapical lobe-like expansion. All subcoxae simple .... 2.
—. Mandible with a single curved apical tooth and a subapical lobe-like expansion. Subcoxae simple or otherwise (ommatidia absent, species white to yellowish) .... Gen. *Anuridella* Will.
2. Species without pigmentation or ommatidia .... Gen. *Aphoromma* MacG.
—. Species strongly pigmented; ommatidia 3+3 or 5+5 ... Gen. *Anurida* Lab.

Anurida denisi Bagn.

Anurida trioculata Denis, 1922, Bull. Soc. Zool. Fr., 47, pp. 108-116, figs. (*nec* Kinoshita, 1916); *Anurida denisi* Bagnall, 1939, Ent. Mon. Mag., LXXV, p. 101.

Since dealing with the synonymy of this interesting species, I have found examples in my old collection and Litster has sent it me from S. Devon and Dublin. Apart from differences in the PAO and in the number of ommatidia, *A. denisi* may be separated from *A. maritima* by its smaller size (*c.* 2·0 mm.) and by its less dense clothing of finer bristles, none of which are spine-like. *A. maritima,* as a matter of fact, is dorsally very densely clothed with long stout bristles; the various areas of the head (excepting the ocular) are crowded with these long bristles, a few being longer and stouter than the others, whilst six of those on Abd. VI are almost spine-like and are directed backwards arranged in series of four and two, as in *Polycanthella acuminata* Den.

DURHAM, Roker, several examples, x.12; DEVON, banks of the Dart at Dittisham, vi.36 (*J. Litster*), one only.

IRELAND: Howth, Co. Dublin, 28.v.39 (*J. Litster*). Previously known from French coast.

Genus *Aphoromma* MacGillivray, 1893.

Canadian Ent., XXV, p. 314.

Near *Anurida. Species white to yellowish; without pigment; dorsal setae sparse.* Mandible and maxilla as in *Anurida.* PAO as in *Anuridella; ommatidia absent.* Coxal joints of legs simple.

GENOTYPE: *A. granaria* (Nic.).

Aphoromma granaria (Nic.).

Whilst this widely distributed insect is to be found in many diverse situations, usually where there is substantial moisture, I do not think that it has previously been recorded as existing below high-water mark. On the Forth Coast on both sides of the channel of the River Almond, near Cramond, colonies exist from high-water to the lowest tide-mark, where it is found with such true halophiles as *Onychiurus halophilus* Bagn., *O. imminutus* Bagn. and *Archisotoma besselsi* (Pack.). These halophilous examples are unusually large and mostly distinctly yellowish in colour.

The median lamella of maxilla-head projects well beyond the apex in *granaria,* but not in *thalassophila.* In addition we find that *A. granaria* differs from the following species by the shorter setae of Ant. I; the much longer fine setae of Ant. IV, which are longer than the bristles on II and the longer curved sense-cones. The chaetotaxy of the body is substantially different; for instance, tergites IV and V in *granaria* are furnished only with one row of long strong bristles, other setae being absent or vestigial.

Aphoromma thalassophila sp.n.

Length 1·0-1·35 mm. White to primrose yellow; form as in *Anuridella marina*; dorsal cuticle strongly granular.

PAO in form of rosette (rarely elliptical) with (12) 14—16 (18) contiguous peripheral tubercles. Ant. I and II each with a median transverse series of long and stiff bristles; III and IV connate, with a number of fine bristles of varying lengths, the longest shorter than those on II: curved sense rods of Ant IV short, stout and blunt, numbering 6—8; III with a pair of minute sense-cones arising from pits and apparently an equally minute accessory cone somewhat remote therefrom. Claw simple, untoothed. Maxilla head with median lamella *not* projecting beyond apex. Arrangement of tergal setae (which vary in length in different colonies of the species) as follows:—Abd. VI several strong bristles; V with two transverse series, the outer and inner pairs of the posterior (more distal) series of 6 longest and strongest, the intermediate pair shorter and, though usually longer than those of the anterior series, more slender: anterior series of 8, usually more or less subequal in length and stoutness. Abd. IV with dorsal swellings forming a median and two lateral areas—the median area with two distal pairs, the inner and sub-distal pair longer than the outer, together with four basal setae shorter than the distal series and the outer pair more widely separated. Each lateral area with two sub-basal bristles and three sub-distal of which the outer and inner are the longest of the area and the middle one is minute and fine. Head with large antero-median area carrying 9 pairs of bristles (two larger than the others) and a single median basal one; antero-lateral area each with PAO situated distally and two longer and 4 or 5 smaller bristles; small postero-median area, with four pairs, the outmost pair (situated medianly) the longest; postero-marginal areas almost merging into the antero-marginal and each carrying 10 bristles or setae, three of which are longer than the others. The species is abundantly distinguished from *granaria* by its chaetotaxy, and those found in estuaries or tidal rivers appear to have substantially longer setae than those found on the coast.

SCOTLAND: Dalmeny Estate with *Anuridella marina* under deeply embedded stones resting on a clayey silt below high-water mark, vi.34 onwards; S. Queensferry, v.36; and Torryburn (FIFE), 16.vii.37. HEBRIDES: Barra, vii.35 (*Waterston*).

ENGLAND: NORTHUMBERLAND: Whitley Bay, at mouth of Briar Dene, ix.38; Alnmouth, iii.35 onwards; Seaton sluice, one only, iv.39. DURHAM: Ryhope Dene, common, vi.34; banks of the Tyne at Gateshead, 18.vi.39. YORKS: Flamborough Head and Dane's Dyke, vi.34; Ferriby, iv.37. DEVON: Dittisham on the Dart, vi.36 (*J. Litster*); Torquay, one only, vi.36.

IRELAND: Plentiful in many localities (*J. Litster*).

Genus *Anuridella* Will.

1906, Mem. Soc. Ent. Belg., XII, p. 247.

Species white to pale yellow. Ommatidia absent; PAO present with several peripheral vesicles arranged in the form of a rosette or ellipse. Mouthcone as in *Anurida* but *mandible with a single curved apical tooth and a subapical lobe-like expansion*. Maxilla head furnished with three ciliate lamellae. Ant. IV with terminal trilobed organ. *Third subcoxa of third (or second and third) pair of legs with a protuberance* (excepting in *A. marina*). Species littoral and all known from British shores.

GENOTYPE: *Anuridella marina* Will.

Table of Species.

1. All coxae simple. Length 1.25 mm., legs and last abdominal segment normally long .... *A. marina* Will.

—. Third sub-coxa of hind legs or of hind and intermediate legs furnished with a prominent protuberance .... 2.

2. Hind legs only furnished with protuberance PAO in form of ellipse with c.20 peripheral vesicles .... 3.

—. Intermediate and hind legs with sub-coxal protuberance. PAO in form of rosette with 8—11 peripheral vesicles. Median lamella of maxilla head projecting well beyond apex. Species small, slender ... *A. immsiana* Bagn.

3. Size larger (1.2 mm.), broader. Legs of normal length. Last abdominal segment abnormally long. Median lamella of maxilla head projecting beyond apex .... *A. calcarata* Den.

—. Size smaller (0.9—1.0 mm.) and more slender. Legs very short and stout and last abdominal, segment short. Lamella not projecting appreciably beyond apex of maxilla head .... *A. submarina* Bagn.

Anuridella immsiana Bagn.

Since describing this species from Ireland and Scotland I have found it plentifully on the Durham coast, where it occurs in some numbers in sand below high-water mark. After turning over a stone deeply embedded in sand a little pool is often left at the bottom of the cavity, and it is a simple matter to push the sand of the surrounding walls into this water little by little, when the *Anuridella* floats to the top to be captured by means of a pipette or camel hair paint brush. The species is larger than originally described, reaching to *c.* 1·0 mm. in length; the median lamella of the maxilla reaches substantially beyond the apex of the head and each foot is furnished with one long stiff bristle as long as the claw, as in *submarina.*

DURHAM: Whitburn, 10 and 11.vi.39, both sexes. E. YORKS: Coast near Sewerby, vii.39.

Anuridella submarina Bagn.

When examining the type-locality of this species, which I discovered at Whitburn five years ago (9.vi.34), I found a simple method of collecting *Anuridella* on the sandy zone (described above). The two species *submarina* and *immsiana* occur together, but the former preponderates in a finer and the latter in a coarser, more gritty sand.

Both sexes are present and in approximately equal numbers; of seventeen examples examined I was unable to determine the sex of two, and of the remainder seven were males and eight females. Of twelve specimens of *immsiana* taken at the same time the sex of two was not determined and of the remainder six were males and four females. The foot is furnished with one long stiff bristle as long as the claw. I now have the species from England, Scotland and Ireland.

Micranurida pygmaea Börn.

I first recognised this little species in 1910, when I found it under bark of beech at Gibside (DURHAM). It has since been recorded from YORKSHIRE, DERBYSHIRE, BUCKINGHAMSHIRE and N. WALES. The following are some of my own records:—

DURHAM, Gibside, under beech bark with *Friesia claviseta*, 3.ix.10 onwards; Cox Green, under bark of willow, iv.12. NORTHUMBERLAND, Stocksfield, various dates. YORKS, Ravenscar, under pine bark, 10.ix.10. ESSEX, Epping Forest, various dates. SCOTLAND, Edinburgh district, rare; near summit of Arthur's Seat, i.35 onwards, and the Pentlands, near Lothianburn, at 1,400-1,600 feet, i.35.

Genus *Paranura* Axels., 1902.

Like *Anurida*, ommatidia present or absent. PAO absent. Furca, emp. ap. and AH absent. *Maxilla head slender, pointed and without lamellae.* Mandible of *Anurida*-type.

Paranura sexpunctata v. *clavisetis* Axels.

A white to yellowish species reminding one of *Anurida granaria*, but having darkly pigmented ommatidia and no PAO. The type form has three ommatidia on each side and the variety only two. I identified this species as far back as 1910 and completely forgot about it until, turning over some old material, I discovered the remnants (one example recognisable) of the original specimens.

DURHAM, Cox Green, under bark of willow, one example, iv.12. YORKS, Ravenscar, under bark, ix.10. IRELAND, Belfast, v.39. A very small and young example found under coniferous bark is almost certainly referable to this form (*J. Litster*). Previously known from Norway and Finland.

Family TULLBERGIIDAE.

Stenaphorura axelsoni Bagn.

The *S. quadrispina* of my old collection now in existence are referable to this species.

DURHAM, Hylton, iv.12 (the only examples existing, but I took it in numerous localities).

The following three species are also represented amongst the unidentified species of my old collection:—

Stenaphorura denisi Bagn.

This fine and distinct species is the commonest British form and is widely distributed.

DURHAM, Blackhall Rocks, iv.12.

Stenaphorura lubbocki Bagn.

A rare species.

DURHAM, Blackhall Rocks with above, iv.12.

Stenaphorura absoloni Bagn.

A local species, though apparently not uncommon in Ireland (*Litster*).

DURHAM, Blackhall Rocks, iv.12, one only; Gateshead, one example from under a stone on waste ground, 18.vi.39. DEVON, Torquay, v-vi.37 (*J. Litster*). Further Scottish records are from Cobbinshaw Loch, 6.v.37, and Culross (FIFE), 10.v.37.

Paratullbergia carpenteri Bagn.

This species is amongst my unidentified *Tullbergia* material gathered between 1909 and 1912 from Cox Green, Blackhall Rocks and Hylton (DURHAM). It is widely spread in this country and is also turning up in many parts of Ireland (*J. Litster*).

Paratullbergia macdougalli Bagn.

Apparently a very local species of which I have a single example amongst my unidentified old material.

DURHAM, Blackhall Rocks, iv.12, one example only. NORTHUMBERLAND, Seaton Sluice, one example on the sea banks, 10.iv.39.

Family ONYCHIURIDAE.

Onychiurus flavidulus Bagn.

DURHAM, St. John's Chapel in Weardale, in *Sphagnum* at about 1,500 feet, vi.10.

Family ISOTOMIDAE.

Isotomodes templetoni sp.n.

Some little time ago Mr. Litster sent me two examples of this little species from the Belfast neighbourhood, but they were unfortunately crushed beyond recognition during study. I am now able to describe it from a third example.

Length 0·6 mm. Elongated, white, integument smooth. Generally much as in *I. britannicus* Bagn.

PAO narrowly elliptical and c.1.1 times the width of Ant. I, posteriorly protected by 8 guard setae. Antenna 1.25 times the length of the head; relative lengths of segments 9.5 : 12 : 12.5 : 18—IV with several long slender sensory-rods. Abd. IV with posterior margin of tergite much as in *britannicus* but the median curved spine-like bristles relatively substantially stouter than in that species; V + VI without the two strong antero-median spine-like bristles characterising *britannicus*, but in their place *a small hump-like swelling furnished with a few short setae;* lateral and postero-marginal spine-like bristles as in *britannicus*, but a median series of five comparatively shorter and appreciably stouter than in that species. Body setae more minute and abdomen comparatively shorter than in *britannicus*. Furcula extending to about one-half way across sternite III; manubrium without ventral setae *and dentes each furnished with* 1 + 2 (3) *minute but stout ventral setae.* Relative lengths of manubrium, dentes and mucro 20: 9: 3. Empodial appendage simple, spine-like, and c. 0.5 the length of claw in hind foot. Tenaculum with rami tridentate and corpus with a single seta.

IRELAND, Toomesbridge, L. Neagh, one example from shore, 13.v.39. Also from Belfast (*J. Litster*).

Archisotoma nigricans sp.n.

Length *c.* 0·9-1·0 mm. Form slender. Dark greyish-black to black with pale mottlings, intermediate body segments with irregular transverse paler belts at interstices. Ant. dark. Legs and body ventrally not so deeply pigmented and furca paler. Body vestiture consisting of minute and somewhat sparse setae, with a few longer erect ones; bothriotrichae present, very weak (? ciliate).

Antenna about 1.4 times the length of the head; relative lengths of joints c. 18 : 24 : 26 : 27. Ant. II with a rounded apical swelling on upper side, which is difficult to distinguish except in specimens mounted laterally; III without the typical short sense rods, which are replaced by two very long sense rods curved at base and forwardly directed; they are substantially longer than those on IV, at least 0.25 as long as the joint, and one is situated well behind and to one side of the other; IV with apical lobe and papilla and several long sense-rods. Ommatidia 8 with G and H small as in *besselsi;* PAO exceptionally elongated, parallel-sided, and in its transverse length about six times the diameter of the nearest ommatidia and usually greater than the width of Ant. I. Tibiotarsus III with a short, stout, slightly curved thorn-like preapical seta. Foot much as in *besselsi,* the claw relatively shorter, the inner margin without tooth. Tenaculum with rami quadridentate; corpus with small anterior accessory lobe and without setae. Abd. V and VI almost completely ankylosed. Furcula as in other species, but less stout; reaching to beyond middle of sternum II; teeth of mucro less stout than in *besselsi* and setae of dentes shorter and weaker.

This species is readily recognised by its small, slender form, its black colouration and weak body setae, as well as by many details of structure, such as the thorn-like spine of hind tibiotarsus, the apical swelling of Ant. II and the exceptionally long sensory rods of Ant. III, etc.

The head of the maxilla is of yet another type than described for *besselsi* and *megalops,* but is difficult to describe from the material available. The galea appears to be triangular in form and forwardly directed; it is flanked by one large lamella considerably longer than the galea and one side straight and the other curved; the curved edge is ciliate, the cilia extending slightly round the apex. At or near the base of this lamella is a brush of long cilia. There appears to be a second similar but shorter lamella (ciliate?), together with two rods bent near their apices.

DURHAM, Whitburn coast, 10-11.vi.39, under stones embedded in more or less coarse, gritty sand (in which occurs *Anuridella submarina* Bagn. and *A. immsiana* Bagn.) below high-water mark. Very active. E. YORKS: Coast, nr. Sewerby, 15.vii.39.

Archisotoma megalops Bagn., 1939.

The following are further records of this interesting halophile recently described from Canvey Island:—

SCOTLAND, S. Queensferry, 1934, and DURHAM, coast at Roker (near Sunderland) with *Anurida denisi* Bagn., x.12.

Axelsonia littoralis (Mon.) Den.

Since recently bringing this species forward as British I find I have a Hampshire record as below:—

HANTS, Hayling Island with *Anurida maritima*, 17.vii.38.

Isotoma poseidonis Bagn., 1939.

IRELAND, Howth, Co. Dublin, with *Anurida maritima* and *A. denisi*, 28.v.39 (*J. Litster*). First Irish record.

Proisotoma minima Abs.

DURHAM, Cox Green, iv.12, and Gibside, ix.10, from under bark of willow and beech respectively.

Family ENTOMOBRYIDAE.

Genus *Pseudosinella* Schäffer, 1897.

The following species fall in a section in which the species are without ommatidia and the empodial appendage of the foot has the outer margin expanded in the form of a large wing-tooth.

KEY TO SPECIES.

1. Dental laminaria of claw occupying about the basal two-thirds of the inner margin and having the median tooth developed. Antenna 1.5 times as long as the head .... *P. pettersení* Börn.

—. Dental laminaria less than 0.5 the length of the inner margin and with the median tooth obsolete (claw short and stout with short, weak, *pointed* tenent hair). Antenna twice the length of the head. Species halophilous. .... *P. halophila* sp.n.

Pseudosinella petterseni Börn.

Until now this was the only known European species of the section, and it may be readily separated from *P. halophila* sp.n.

by means of the above table. Mills in his work on the Collembola of Iowa (p. 76) states that *P. violenta* Fols. differs from *petterseni* in the reduction of the anterior paramedian tooth of the claw and in the longer unguiculus (emp. app.) and further adds that *P. petterseni forma* C.R., Denis, 1931, from Costa Rica is without doubt *P. violenta*. Bonet (1931) regards *violenta* as a synonym of *petterseni*, and as the specimen now recorded does not differ from *violenta*, as indicated above, and agrees very closely indeed with *petterseni forma* C.R., Denis, I think that Bonet is right in his conclusions.

IRELAND, Helen's Bay, Co. Down, iv.38, one mutilated example only (*J. Litster*). Previously known from Germany, Spain, U.S.A. and Costa Rica.

Pseudosinella halophila sp.n.

Length *c.* 1·5 mm. White to yellowish-white.

Antenna approximately twice the length of the head diagonal; relative lengths of joints c.10 : 21 : 18 : 31—II subcylindrical, III broadening to distal fourth or thereabouts and thence sharply narrowed; IV 5.0 to 6.0 times as long as broad. Abd. IV c.3.0 times the length of III. Mucro as in allied species, and 0.5 the length of the smooth distal portion of dentes; dentes a little longer than the manubrium, the two longest 'hairs' at end substantially over-reaching mucro. Rami of tenaculum quadridentate. Claw short and stout, inner margin straight in the basal 0.4 or thereabouts to accommodate the dental laminaria and thence curving to tip. Internal posterior tooth very large (much as in *immaculata*), but the anterior less developed; median tooth obsolete. Emp. app. large, 0.7 the length of the inner margin of claw and more than twice as long as broad at basal third; outer lamina forming a large wing-tooth. Tenent hair short and weak, pointed, less than 0.4 the length of the claw.

This species differs from the American species *folsomi* Denis markedly in the long antennae and the relative lengths of their joints, the short stout foot and the short tenent hairs. In *folsomi* Den. the antenna is only 1·5 times the length of the head diagonal. Ant. II and III are subequal and IV 3·0 times as long as III (compared with 1·7 times the length in *halophila*), and the claw is longer and more slender with long slender tenent hair slightly dilated at apex.

KENT, Cooden Beach under stones uncovered at low tide along the sides of a creek running from behind the beach through a culvert to the sea, viii.38 (type and paratypes); common and very active. S. DEVON, Kingsteignton, in a similar situation on the shores of an arm of the sea, vi.36.

3 St. Helen's Terrace,
Low Fell, Gateshead-on-Tyne.
June 21st, 1939.

A SPECIES OF *PHILONTHUS* (COL., STAPHYLINIDAE) NEW TO THE BRITISH ISLANDS AND TWO NEW VARIETIES.

BY THE REV. C. E. TOTTENHAM, M.A., F.R.E.S.

Philonthus furcifer Renkonen.

(1937, *Ann. Ent. Fenn.*, **3** : 46, 73)

Some time ago I separated several specimens which I had received as *Philonthus micans* Gravenhorst from the rest of my series as being a distinct species. Not knowing *P. virgo* Gravenhorst at the time, I did nothing further in the matter. Since then I have seen Renkonen's excellent description of his new species *furcifer*, and from this, together with his figures of the aedeagus, I had no difficulty in identifying my specimens as being this species.

In view of the detail of Renkonen's description, it will suffice here to point out the main characteristics by which the species may be separated from *P. micans* Gravenhorst. The beetle is of a slightly more robust build than *micans*, and the coloration is a little different; the elytra are black and lack the dull grey appearance of *micans*; the antennae and legs are blackish, except for the knees and tarsi, which are brown, whereas in *micans* the legs are for the most part yellowish. In *micans* the head is a little smaller and the temples are more distinctly narrowed behind. The punctuation of the elytra in *furcifer* is much stronger and more diffuse than in *micans*. The aedeagus is markedly different in the two species. The median lobe is strongly narrowed and produced into a very blunt point in *micans*, but in *furcifer* it is broadly rounded; in the former species the median lobe extends considerably more than its greatest breadth beyond the apex of the paramere, whereas in *furcifer* it is distinctly shorter in the apical region than its breadth. The paramere is furcate in both species, but whereas the furcation is rounded at the base interiorly in *micans*, it is V-shaped in *furcifer*.

My specimens all come from Killarney, where they were captured on various dates by Mr. E. Bullock. This locality is of great interest, for the species was described from Finland, occurring in several localities in that country.

Philonthus sanguinolentus Gravenhorst ab. nov. **suturamonus**.

There are two described varieties of this species, namely ab. *aciculatus* Stephens in which the humeral and sutural red patches are united, and ab. *unicolor* Seidlitz in which the red patches are absent. A third variety also occurs in which the humeral red patches are lacking but the sutural red patch is distinct. To this I give the name *suturamonus*. All three forms occur in this country, but they do not seem to be at all common. Out of many specimens of *sanguinolentus* in my collection, I have only one *suturamonus* from Bagley Wood (BK), two *unicolor* from Leeds (MY) and Rous Lench (WO), and five *aciculatus* from Rous Lench (WO), Wixford (WW) and Chichester (WX). Amongst my Continental specimens I have a number of specimens of *aciculatus* from localities in Germany, Austria and Czechoslovakia, and two *unicolor* from Gramais (Austria) and Ulm (Wurtemburg).

Philonthus debilis Gravenhorst ab. nov. **coloratus.**

Occasionally a variety of this species may be found with the elytra red with a slight brownish tint. To this I give the name *coloratus*. It appears to be decidedly rare, as evidenced by the fact that out of some 350 or more specimens examined, both from this country, the Continent and North America, only two are this variety. These two specimens come from Chichester and from Mostarsko-blato (Jugoslavia).

88 Station Avenue,
W. Ewell, Surrey.
August 20th, 1939.

On the Country of origin of Cis bilamellatus Fowler.—Ever since the discovery of this species by the Revd. Theodore Wood (1884, *Ent. Mon. Mag.*, **21**: 130, 147) at West Wickham, and its subsequent occurrence in considerable numbers in other localities, it has been something of a mystery that such a distinct species should have escaped previous notice. It has indeed already been suggested that it is an introduced species that had become established only shortly before its discovery. Having had occasion recently to examine some of the Australian species of this genus in the British Museum I was surprised to recognise in *C. munitus* Blackburn, represented in the Museum by specimens from Tasmania, and also Albany, W. Australia, our so-called British species. As the Australian insect was not described until 1888 no change in name is involved for our species, although it should be transferred to the ever-growing list of introduced species now established in the country.—K. G. Blair, British Museum (Natural History), London, S.W.7: *August 1st*, 1939.

Aglais urticae L. (Lep., Nymphalidae) taken by blackbird.—On July 12th, a very tame blackbird, frequenting the garden here, caught a fresh *Aglais urticae* L. only a few feet from me. The butterfly was held in the bird's beak, horizontally across the hind-wings, both wings being closed over the back. If the insect had freed itself the incisions would have been exactly where they are so often seen on the wings of Lepidoptera. The bird at once bolted the whole insect with gusto. Unfortunately, the actual pursuit was not seen.—F. H. Haines, Linwood, Ringwood, Hants: *August 16th*, 1939.

COSSONUS LINEARIS (COL., CURCULIONIDAE), A SPECIES OF COLEOPTERA NEW TO BRITAIN.

BY HORACE DONISTHORPE, F.Z.S., F.R.E.S., ETC.

Mr. S. O. Taylor, of Leicester, recently sent a specimen of a *Cossonus* to me to name, pointing out that it differed from our known species, *C. parallelepipedus* Hbst. (*ferrugineus* Clairv.). With the help of Reitter (*Fauna Germanica*) and the specimens in the general collection at the British Museum (Nat. Hist.), Dr. Blair and I at once determined it as *C. linearis* F., a species new to the British list.

It may be separated readily from *parallelepipedus* by the fact that the punctures of the striae are large and nearly as broad as the interstices, whereas in our known species they are fine and considerably narrower than the interstices. The thorax also is considerably more coarsely punctured, especially at the sides and on each side of the median line.

Reitter says it is often abundant in Germany in poplars and sallows, but as *parallelepipedus* is recorded from oak as well as poplar (also fir and pine) there is no reason why *linearis* should not also occur in oak. Mr. Taylor tells me that his specimen was taken by his son, Mr. S. A. Taylor, at Ranworth Broad, crawling on the end of a recently cut oak trunk in July last. We congratulate the Messrs. Taylor on this nice addition to the British list.

C. linearis F. is found in Germany, France, Italy, the Caucasus, etc.

British Museum (Natural History),
London, S.W.7.
August 11th, 1939.

Obituaries.

ALFRED ERNEST TONGE.—We regret to learn of the death on August 7th, 1939, of Alfred Ernest Tonge, F.R.E.S., in his seventieth year. Born on October 11th, 1869, the son of J. W. Tonge, of Highgate, he was educated at Highgate School. In entomology his interests were confined to the Lepidoptera, but he was also a keen photographer and specialised in the photography of the eggs of the Lepidoptera, his series of photographs of the eggs of the British Macro-Lepidoptera being almost complete. A set of his photographs of the eggs of the British Butterflies has long been exhibited on the walls of the Insect Gallery of the National History Museum. He joined the South London Entomological and Natural History Society in 1902, serving as President in 1912 and 1913 and as Treasurer from 1919 until compelled by poor health to resign in 1936. He become a Fellow of the Entomological Society of London in 1907, and served on the Council from 1915 to 1917 and again from 1927 to 1929. He leaves a widow and two daughters, to whom we would tender our deep sympathy in their bereavement.—K.G.B.

WALTHER HORN.—No more ardent worker in the cause of Entomology has lived in our time than Dr. Walther Horn, Director from its foundation of the Deutsches Entomologisches Institut in Dahlem, Berlin, whose death occurred on July 10th at the age of sixty-eight. Although in failing health for a considerable time, he continued almost to the last to labour for the institution, the creation of which he made the work of his life.

As a young man Horn studied medicine and took a medical degree, but, his circumstances making it unnecessary for him to enter into practice, he was able to devote the whole of his remarkable energy to the cause of Entomology and it was only during the four years of war, 1914-1918, that he actually exercised his original profession. His love of insects was stimulated, if not first aroused, by his master, Dr. Gustav Kraatz, for many years one of the foremost Entomologists in Berlin. Kraatz had accumulated a large collection of the Coleoptera of the world, as well as an important Entomological library, and formed a plan for the foundation of an institution to be devoted to the promotion of Entomological science. A number of other owners of insect collections in Germany agreed to help in the realisation of his project.

Launched in 1886 by means of a sum of 60,000 marks provided by Kraatz, Royal authorisation was granted in 1887 for the establishment of the Deutsches Entomologisches National-Museum under the aegis of the Municipality of Berlin. The latter provided the accommodation—a room in the building occupied by the municipal Savings Bank. Specimens of various other kinds were housed in the same room and when it was proposed to find a more suitable location for the entire collection it soon became evident that the peculiar needs of an Entomological Museum would receive little consideration. Kraatz and his co-adjutors, amongst whom Walther Horn soon became the most active, therefore decided that for the success of the scheme it was essential that a separate building should be provided. Kraatz was willing to find the necessary funds and on his instructions plans were prepared for the purpose. In 1909 he died, at the age of seventy-eight, a bachelor without dependents. His will provided that, not only his collections and library, but the whole of his large fortune should be devoted to the purposes he had in view. Horn was nominated Director of the Museum and Executor (jointly with another friend) of Kraatz's testament.

With ample funds at his disposal he took up the task with enthusiasm. Had it been in the hands of a man of less energy and determination the obstacles and difficulties he was to encounter would almost certainly have resulted in failure. The site of the new building had already been acquired and contracts for its erection had been arranged when legal proceedings for its prohibition were started, on the ground, amongst others, that the interests of the Berlin University Museum of Zoology would be adversely affected by the existence of such an institution. Only after wearisome appeals and approaches to various exalted personages—he threatened if necessary to carry the case before the All-Highest himself—was his right at last established to use the funds in hand for the purpose for which they were intended. Protection and security were ultimately obtained by affiliation with the Kaiser Wilhelm Gesellschaft.

In 1911 the handsome new building in Dahlem was actually occupied, an adequate staff engaged and an ambitious programme of work entered upon, including the publication in the following year of two journals for Entomological literature, *Entomologische Mitteilungen* and *Supplementa Entomologica*. It was ultimately decided that a Museum, in the narrow sense of the term, would be of less value than an institution devoted chiefly to the literature of Entomology, and in 1921 the name was changed to Deutsches Entomologisches Institut.

Three years after the institution opened its doors came the Great War, the

Director was called upon for military service and for four years had to abandon all his visions of useful achievement, which were succeeded by troubles and anxieties far greater than those he had with so much difficulty surmounted. He was at least fortunate in being able, instead of adding to the vast tale of misery caused by the militarists of 1914, to help in alleviating the sufferings of some of their countless victims.

After the War came Inflation-time, when invested funds melted away, the rich became paupers in a night and thousands of marks would not buy a single meal. The previously handsome revenue of the Institute became insufficient even to provide adequate heating, the staff had to be dismissed and only by begging financial assistance from his friends in other countries could the Director manage to save the enterprise from utter ruin. In a letter to me in January, 1924 (his English was fluent but sometimes a little imperfect), he wrote: 'I have no one assistant anymore. Only one girl is left to me. She does not understand stenography nor typewriting, but she is in all other ways a fine girl. We have one small room heated by a little iron stove; in all other rooms we have, since 3 weeks, 3-5 degrees under zipher (*i.e.* zero); also in our library, where we have to work every day some hours. The same for all collection-rooms. As I have not one cent 'household' he means regular income) I have to be very economical and I have to turn each penny three times before I give it away. The chief thing of course is to keep the Institute upright and I was so lucky to be able to do it until now, for what I feel very grateful to my fate. For scientific work I have hardly any time—I have to be glad if I succeed to get together the money from all parts of the earth for my Institute.'

Although during the four years of war his health had been excellent, the post-war trials, which lasted for several years, combined with his anxieties for his family, who were also suffering from the general privations, affected him seriously and brought on a breakdown from which he never completely recovered. When better times came, although it was necessary to be satisfied with less ambitious schemes than he had before contemplated, much useful work was accomplished and the Institute became known everywhere as a centre of activity. He was rewarded by the knowledge that, largely through his own efforts, the status of Entomology in Germany was very definitely improved.

Horn's chief personal interest had always been the study of the Tiger-beetles (Cicindelidae), upon which he published numerous important works; but of more general importance are the records which he laboriously compiled for the use of present and future students of all branches of his science. He aimed at the production, and up to a certain point completed the preparation, of a catalogue of the whole of Entomological literature. His 'Ueber entomologische Sammlungen,' 1935-7, recording the history of all insect collections of scientific importance from the time of Linnaeus, is a work of the greatest value.

He was a man singularly free from personal aims. His great ambition was to fulfil that of his friend, Dr. Kraatz, to establish an institution for the benefit of Entomological science throughout the world. To him, more than to any other man, was due the initiation in 1910 and the successful perpetuation of International Congresses of Entomology. He travelled widely in Europe, Asia, Africa and America, and in Ceylon made an important collection of insects. He made friends in all lands, and refused to narrow his aims by national limitations. During the War he courageously adopted as the motto of his Institute the phrase (in English) 'All men of science are brothers' and printed it on his notepaper. His attitude brought him strong antagonism in his own country, but he has earned the gratitude of all disinterested workers for the cause he loved.—GILBERT J. ARROW.

Societies.

Entomological Club.—A meeting of the Entomological Club was held at Mill Green Park, Ingatestone, on June 24th, 1939, Dr. Sheffield A. Neave in the Chair.

Members present in addition to the Chairman: Mr. Jas. E. Collin, Dr. Harry Eltringham, Mr. W. Rait Smith, Dr. R. R. Armstrong.

Visitors present: Mr. H. E. Andrewes, Mr. H. W. Bedford, Mr. H. S. Bushell, Mr. E. C. Bedwell, Dr. A. D. Imms, Dr. Karl Jordan, Sir Guy A. K. Marshall, Mr. A. M. S. Neave, Mr. W. H. T. Tams.

The party arrived in time for luncheon, after which Mr. Jas. E. Collin exhibited a specimen of the Tachinid *Subclytia rotundiventris* Fln.—the first authentic British specimen, for though Dr. R. H. Meade recorded the species in 1892 as 'Rare—in Mr. Dale's collection' the specimens standing under that name in the Dale Collection are specimens of *Myiobia*, according to Mr. C. J. Wainwright. *S. rotundiventris* is widely distributed on the Continent, including France and Denmark. It has been bred from the Pentatomid *Elasmostethus griseus* L. in Denmark by Nielsen, who states that there are two broods in the year. The specimen exhibited was taken at Farley Downs near Kings Somborne, Hants, on June 3rd, 1939. He further exhibited two pairs of the Syrphid *Chrysotoxum octomaculatum* Curt. One pair had been killed by weak sulphur fumes, the other in an ordinary cyanide killing bottle, in order to show how very much better the natural colours are retained in these yellow and black insects by making use of the former method.

During the afternoon the weather was cold and dull and though there was little rain it was just enough to curtail the walk round the farm, the general object being to see the Aberdeen-Angus cattle. After tea at 4.30 the party broke up about 6 o'clock.—H. Willoughby Ellis, *Hon. Secretary*.

South London Entomological and Natural History Society: *July 13th*, 1939.—The President was in the Chair. Mr. M. Niblett exhibited many parasites bred from plant-galls. Mr. S. W. C. Williams, larvae of *Cucullia chamomillae* Schiff., taken July 11th, 1939. Dr. G. V. Bull, flowers of *Bartsia viscosa* L. and *Lysimachia vulgaris* L. Mr. J. O. T. Howard, a female of the heather form of *Ematurga atomaria* L. in which the outer transverse line was absent. Mr. T. R. Eagles, young larvae of *Palimpstis or* F. and the gall of *Rhodites rosae* L. (Cynip.) with the gall causers and many inquilines and parasites. Mr. F. D. Buck, specimens of *Strangalia quadrifasciata* L. from Oxshott Common, July 2nd, 1939. Mr. C. N. Hawkins, a Dipteron bred from a larva of *Bupalus piniarius* L. taken at Oxshott. The President, aberrations *Euchloë cardamines* L. ab. *andromorpha* Vty. *Hipocrita jacobaeae* L. ab. *confluens* Schultz, and *Pieris rapae* L. with aberrant marking. Mr. H. Moore, oötheca of *Ectobius lapponicus* L. and read notes on its occurrence. Dr. E. A. Cockayne, a long series of *Bupalus piniarius* L. bred from Oxshott, including many interesting variations. Mr. Wallis Norton, a sample of his captures in Wyre Forest during early June, 1939. Also a melanic form of *Cymatophora fluctuosa* Hübn. from Ashdown Forest. No other record of this form is known. Mr. R. A. R. Priske, *Cylindronotus laevioctostriatus* Goez. (Col.) with bifurcate antennae. Mr. M. Niblett read a paper: 'Parasites of Gall-causing Insects.'—Hy. J. Turner, *Hon. Editor of Proceedings*.

Reviews.

'THE INSECT LEGION.' By MALCOLM BURR, D.Sc., F.R.E.S. 8vo, xiv + 321 pp., 27 illustrations. Published by James Nisbet & Co., Ltd., London. 1939. Price 12/6.

A book by this distinguished entomologist is sure to be interesting and worth reading, and this is the case with the volume mentioned above. Dr. Burr has produced a book which is full of information regarding insects, their lives, habits and structure. He has gathered together the observations of many other entomologists, and has embodied these records in a readily accessible and readable form. His chapter on the organs of insects is sure to be carefully read by anyone who has the good fortune to take up this book and the chapter on insects as food will be news to many readers. The self-denial shown by Dr. Burr in declining the luscious morsel offered to him by his native servant is self-evident, but one would have expected that good manners would have weighed sufficiently with Dr. Burr to have enabled him to have accepted the gift and told the native and *us* how good it was. It is noticeable, however, throughout this chapter that Dr. Burr seemed content to accept the opinion of others rather than to experiment himself and give us the benefit of his personal experience. He even seems to have shied at the luscious *Blatta*. The book is one that should be put into the hands of all young people, and no school library is complete without two or three copies on its shelves. It is calculated to stimulate the imagination and create a desire to study this vast and intensely interesting branch of Natural History which is slowly being unfolded before us.—R.W.L.

'THE PRINCIPLES OF INSECT PHYSIOLOGY.' By V. B. WIGGLESWORTH, M.A., M.D., F.R.S. Royal 8vo, viii + 434 pp., 316 figs. Published by Methuen & Co., Ltd., London. 1939. Price 30/-.

Entomologists owed a debt of gratitude to Dr. Wigglesworth and to his publishers when his little volume on insect physiology appeared in 1934 in the well-known series of 'Monographs on Biological Subjects.' They have reason to be still more grateful now that this preliminary work has been followed by an extended and amplified version which is a worthy companion to Imms' 'General Textbook of Entomology.' The information, much of it hitherto only available in a multitude of scattered papers and in the above mentioned monograph, is presented in a concise and well-arranged manner and is exceptionally well documentated and illustrated. It is arranged in fifteen chapters, *viz.*:—Development in the Egg, The Integument, Growth, Muscular System and Locomotion, Nervous System, Sense Organs (vision, mechanical and chemical senses), Behaviour, Respiration, Circulatory System and Associated Tissues, Digestion and Nutrition, Excretion, Metabolism, Water and Temperature, and Reproductive System. Morphological descriptions are only given where necessary to clarify the functional account. The book will be invaluable to students, to research workers and to economic entomologists whose methods of insect control depend upon knowledge of the ecology and physiology of the pests concerned. It is a landmark in the literature of entomology.—B.M.H.

'FAUNISTISCHER FÜHRER DURCH DIE COLEOPTEREN-LITERATUR. Die wichtigste Käfer-Literatur nach geographischen Gebieten geordnet.' By S. SCHENKLING. Band 1: Europa, Lieferung 5 (pp. 257-320). 7 in. by 9¾ in. Published by Gustav Feller, Neubrandenburg (Meckl.).

The general plan of this bibliography has already been indicated (*antea* p. 165). Ten pages of the current part are devoted to lists of papers on the beetle fauna of Switzerland, while the remaining 64 pages are concerned with the fauna of the various German provinces.

'CATALOGUE COLEOPTERUM DANIAE ET FENNOSCANDIAE.' Edited by W. HELLEN. Helsingfors, 1939. 4to, pp. vi + 129. Published by Societas pro Fauna et Flora Fennica.

This catalogue of the beetles of Scandinavia is under the general editorship of W. Hellen, who is himself responsible for that part of it referring to the beetles of Finland and the adjoining districts of Russia, with the co-operation of V. Hansen for those of Denmark, A. Jansen for Sweden and the late Thomas Munster and A. Strand for Norway. The matter is arranged in column form to show the distribution of the species throughout these countries, and the addition of a map showing the divisions adopted is a useful feature. The sequence adopted is that of Winkler's Catalogus Coleopterorum regionis palaearcticae, and an Index of Genera renders reference easy. The Bibliography at the end includes only works published subsequently to Grill's Catalogue, perhaps an unfortunate economy. The list comprises some 4,360 species (compared with our 3,600 in Britain) and is a valuable contribution to the study of the beetle fauna of North-western Europe, Grill's Catalogue for the same area, published in 1896, being long out of date.—K.G.B.

Colonisation by Water-Beetles.—I can confirm by recent personal observation what Prof. Grensted has written in the August *Ent. Mon. Mag.* (**75**: 174-5). I had occasion to pay a sudden visit to West Sussex, and there in a garden near Steyning I was shewn a small bird-bath that had been repaired and filled only a day or two previously, and which could not hold more than a couple of gallons when full. It was literally swarming with *Helophorus brevipalpis* Bed. There must have been several hundred specimens present. In addition to the *brevipalpis* there were also some Hydropori and Anacaenae which at the time I had no opportunity for examining further. I understand that the nearest permanent water is the lake in Wiston Park, about one-third of a mile away.—THE REVD. E. J. PEARCE, M.A., F.R.E.S., House of the Resurrection, Mirfield, Yorks: *August 5th*, 1939.

Campylomma verbasci Mey.-D. (Hem., Capsidae) at Heston, Middlesex.—On July 27th last I took a pretty little capsid on a Hollyhock in my garden at Heston. This I gave to the British Museum (Nat. Hist.) and they tell me it is *Compylomma verbasci* Mey.-D. It has only been taken in one other locality in Britain before—at Ealing by Mr. D. C. Thomas, who found it in some numbers on Hollyhocks in his garden in September, 1937 (see 1938 *Ent. Mon. Mag.* **74**: 33).—HORACE DONISTHORPE, 332 Great West Road, Heston, Middlesex: *August 14th*, 1939.

Obrium brunneum Fab. (Col., Longicornia) in Dorset and Sussex.—In 1936 (*Ent. Mon. Mag.*, **72**: 149) we recorded the capture of *Obrium brunneum* Fab. in Dorset and Sussex. We think it well to place on record that this species occurred again in both localities this year, though in small numbers, and in each case all the specimens were obtained within a very short distance of the original captures.—P. HARWOOD & L. G. COX, Granish Cottage, Aviemore, Inverness-shire: *August 4th*, 1939.

Obrium brunneum Fab. (Col., Longicornia) in Sussex.—On July 1st, at Laughton, East Sussex, I took a specimen of *Obrium brunneum* Fab. by beating an oak at the edge of a wood. There were Scotch firs within one hundred yards. Mr. L. G. Cox kindly confirmed my determination: he had taken several specimens elsewhere earlier on the same day.—C. J. SAUNDERS, The Lawn, Barcombe Mills, East Sussex: *August 5th*, 1939.

THE MALLOPHAGA (BITING-LICE) RECORDED FROM THE PACIFIC ISLANDS.

BY GORDON B. THOMPSON.

(Continued from p. 123)

97. *Halipeurus marquesanus* (Ferris).

Esthiopterum marquesanum Ferris, 1932, Bull. Bishop Mus., Honolulu, 98, pp. 62-63, f. 14.

Halipeurus marquesanus (Ferris), Thompson, 1936, Ann. Mag. nat. Hist., Ser. 10, XVIII, p. 41.

Recorded host: *Pterodroma rostrata* (Peale).

Locality: Marquesas, Hivaoa.

98. *Synnautes pelagicus* (Denny).

Lipeurus pelagicus Denny, 1842, Monographia Anoplurorum Britanniae, p. 173, Pl. 14, f. 2.

L. languidus Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 475-476, Pl. XXIX, f. 8.

L. exiguus Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 479, Pl. XXX, f. 2.

L. languidus Kellogg and Kuwana, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 319.

L. exiguus Kellogg and Kuwana, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 319.

L. languidus Kellogg and Kuwana, Johnston and Harrison, 1912, Trans. N.Z. Inst., XLIV, p. 367.

L. exiguus Kellogg and Kuwana, Johnston and Harrison, 1912, Trans. N.Z. Inst., XLIV, p. 367.

Esthiopterum pelagicum (Denny), Harrison, 1916, Parasitology, IX, p. 139.

E. pelagicum (Denny), Ewing, 1924, Zoologica, N.Y., V, p. 84.

Synnautes pelagicus (Denny), Thompson, 1936, Ann. Mag. nat. Hist., Ser. 10, XVIII, p. 43.

Recorded hosts: *Oceanites gracilis galapagoensis* Lowe; *Procellaria tethys* (Bonaparte); *Sula piscator websteri* Rothschild; *Actitis macularia* (Linn.); *Pyrocephalus nanus intercedens* Ridgway; *Nesomimus p. parvulus* (Gould); *Geospiza f. fuliginosa* Gould; *Cactospiza pallida producta* (Ridgway); *Puffinus obscurus subalaris* Ridgway; *Fulmarus* sp.; *'Sula fuliginosa'; Pterodroma phaeopygia* (Salvin); *Fregata* sp.?; ?*Pelagodroma marina passerma* (Mathews) (*Pelagodroma nivea* Math.).

Probable true hosts: *Oceanites gracilis galapagoensis* Lowe; *Procellaria tethys* (Bonaparte); *Pelagodroma marina* (Mathews).

Localities: Galapagos Is., Albemarle I., Culpepper I., Wenman I., Clarion I., Kermadec Is.

99. *Harrisoniella diomedeae* (Fabricius).

Pediculus diomedeae Fabricius, 1775, Syst. ent., p. 808.

Lipeurus ferox Giebel, 1867, Z. ges Naturw., XXIX, p. 195.

L. densus Kellogg, 1896, Proc. Calif. Acad. Sci., VI, Ser. 2, pp. 114-115, Pl. VII, f. 1, 2.

L. ferox Giebel, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 318.

L. ferox Giebel, Kellogg and Paine, 1910, Ent. News, XXI, p. 125.

L. densus Kellogg, Kellogg and Paine, 1910, Ent. News, XXI, p. 125.

Esthiopterum diomedeae (Fabricius), Harrison, 1916, Parasitology, IX, p. 133.

Harrisoniella diomedeae (Fabricius), Bedford, 1929, Rept. Vet. Res., S. Afr., XV, p. 529.

Recorded hosts: ? *Diomedea irrorata* Salvin; *Thalassarche nigripes* (Audubon); *T. immutabilis* (Rothschild).

Localities: Galapagos Is., Clarion I.; Laysan I.; Erben Bank.

100. *Perineus concinnus* (Kellogg and Chapman).

Lipeurus concinnus Kellogg and Chapman, 1899, Occ. Pap. Calif. Acad. Sci., VI, pp. 97-99, Pl. VII, f. 2.

L. concinnus Kellogg and Chapman, Kellogg and Paine, 1910, Ent. News, XXI, p. 125.

Perineus concinnus (Kellogg and Chapman), Thompson, 1936, Ann. Mag. nat. Hist., Ser. 10, XVIII, p. 42.

Recorded host: *Thalassarche immutabilis* (Rothschild).

Locality: Laysan I.

101. *Perineus confidens* (Kellogg).

Lipeurus confidens Kellogg, 1899, Occ. Pap. Calif. Acad. Sci., VI, pp. 26-28, Pl. III, f. 1.

L. miriceps Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 480-481, Pl. XXX, f. 4.

L. confidens Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 318.

L. confidens Kellogg, Kellogg and Paine, 1910, Ent. News, XXI, p. 125.

Perineus confidens (Kellogg), Thompson, 1936, Ann. Mag. nat. Hist., Ser. 10, XVIII, p. 43.

Recorded hosts: *Geospiza f. fuliginosa* Gould; ? *Diomedea irrorata* Salvin; *Melanosterna lunata* (Peale).

True hosts: ? *Diomedea irrorata* Salvin; *Thalassarche nigripes* (Audubon).

Localities: Galapagos Is., Albemarle I., Clarion I.; Erben Bank; Laysan I.

102. *Naubates fuliginosus* (Taschenberg).

Lipeurus fuliginosus Taschenberg, 1883, Nova Acta Leop. Carol., XLIV, p. 156, Pl. 4, f. 3.

L. fuliginosus Taschenberg, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 319.

Naubates fuliginosus (Taschenberg), Bedford, 1930, Rept. Vet. Res., S. Afr., XVI, p. 168, f. 9, 15, 16A.

Recorded host: *Sula piscator websteri* Rothschild.

Probable true host: A species of petrel.

Locality: Galapagos Is., Clarion I.

103. *Pectinopygus* (*Pectinopygus*) *minor* (Ewing).

Esthiopterum potens minor Ewing, 1924, Zoologica, N.Y., V, p. 84.

Pectinopygus (*Pectinopygus*) *potens minor* (Ewing), Thompson, 1936, Ann. Mag. nat. Hist., Ser. 10, XX, p. 540.

Recorded host: *Sula nebouxii* Milne-Edwards.

Locality: Galapagos Is.

104. *Pectinopygus* (*Pectinopygus*) *sulae* Rudow.

Lipeurus sulae Rudow, 1869, Beitrag zur Kenntniss der Mallophaga oder Pelzfresser, Diss., Halle, p. 43.

L. gracilicornis major Kellogg, 1899, Occ. Pap. Calif. Acad. Sci., VI, p. 30 (part).

L. gracilicornis major Kellogg, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 477 (part).

L. potens Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 477-478, Pl. XXX, f. 1.

L. helleri Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 479-480, Pl. XXX, f. 3 (part).

L. potens Kellogg and Kuwana, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 319 (part).

L. helleri Kellogg and Kuwana, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 319 (part).

L. gracilicornis major Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 319 (part).

L. potens Kellogg and Kuwana, Kellogg and Paine, 1910, Ent. News, XXI, p. 125.

Pectinopygus sulae (Rudow), Waterston, 1929, Insects of Samoa, Pt. VII, fasc. 3, p. 82.

P. sulae (Rudow), Ferris, 1932, Bull. Bishop Mus., Honolulu, 98, pp. 64-67, f. 16, 17.

P. (*Pectinopygus*) *sulae* (Rudow), Thompson, 1937, Ann. Mag. nat. Hist., Ser. 10, XX, p. 540.

Recorded hosts: *Fregata* sp.; *Sula piscator websteri* Rothschild; *S. dactylatra granti* Rothschild; *Fregata minor* (Lesson).

Probable true hosts: *Sula* spp.

Localities: Galapagos Is.; Laysan I.; Samoa; Marquesas.

NOTE.—Owing to the terrible amount of confusion regarding this species, I have not listed all the recorded hosts since it is impossible to tell from the records alone which specimens represent the present species. Ewing (1924, Zoologica, N.Y., V, p. 82) recorded *E. helleri* (Kellogg and Kuwana) off *Sula piscator* from the Galapagos Is.

105. *Pectinopygus* (*Epifregata*) *gracilicornis* (Piaget).

Lipeurus gracilicornis Piaget, 1880, Les Pediculines, Leiden, p. 309, Pl. XXV, f. 6.

L. gracilicornis major Kellogg, 1899, Occ. Pap. Calif. Acad. Sci., VI, p. 30, Pl. 3, f. 3.

L. gracilicornis major Kellogg, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 477.

L. gracilicornis major Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 319.

L. gracilicornis major Kellogg, Kellogg and Paine, 1910, Ent. News, XXI, p. 125.

Esthiopterum gracilicornis Piaget, Ferris, 1932, Bull. Bishop Mus., Honolulu, 98, pp. 61-62, f. 13.

Pectinopygus (*Epifregata*) *gracilicornis* (Piaget), Thompson, 1937, Ann. Mag. nat. Hist., Ser. 10, XX, p. 542.

Recorded hosts: *Fregata* sp.; *Sterna fuscata crissalis* (Lawrence); *Sula dactylatra granti* Rothschild; *Fregata minor strumosa* Hartert; *Melanosterna lunata* (Peale); *Fregata minor* (Lesson).

Probable true hosts: *Fregata* spp.

Localities: Galapagos Is., Clarion I., Cape St. Lucas, Clipperton I.; Necker I.; Laysan I.; Marquesas, Hatutu (Hatutaa).

106. *Pectinopygus* (*Philichthyophaga*) *nannopteri* (Ewing).

Esthiopterum nannopteri Ewing, 1924, Zoologica, N.Y., V, pp. 82-84, f. 12.

Pectinopygus (*Philichthyophaga*) *nannopteri* (Ewing), Thompson, 1937, Ann. Mag. nat. Hist., Ser. 10, XX, p. 542.

Recorded host: *Nannopterum harrisi* (Rothschild).

Locality: Galapagos Is.

107. *Philoceanus becki* Kellogg.

Philoceanus becki Kellogg, 1903, Biol. Bull., V, pp. 88-89, f. 1, 2.

P. becki Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 320.

Recorded host: *Procellaria tethys* (Bonaparte).

Locality: Galapagos Is.; Wenman I.

108. *Giebelia fuscoclypeata* (Johnston and Harrison).

Philopterus fuscoclypeatus Johnston and Harrison, 1912, Trans. N.Z. Inst., XLIV, pp. 368-369, f. 4.

Giebelia fuscoclypeata (Johnston and Harrison), Harrison, 1916, Parasitology, IX, p. 144.

Recorded host: *Pterodroma neglecta* (Schlegel).

Locality: Kermadec Is.

109. *Giebelia mirabilis* Kellogg.

Giebelia mirabilis Kellogg, 1896, Proc. Calif. Acad. Sci., Ser. 2, VI, pp. 138-140, Pl. XI, f. 7, 8.

G. mirabilis Kellogg, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 482.

G. mirabilis Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 320.

Recorded hosts: *Puffinus obscurus subalaris* Ridgway; *Fulmarus* sp.; *Oceanites gracilis galapagoensis* Lowe; *Sula piscator websteri* Rothschild; *Pterodroma phaeopygia* (Salvin).

Probable true hosts: *Puffinus obscurus subalaris* Ridgway; *Pterodroma phaeopygia* (Salvin); *Oceanites gracilis galapagoensis* Lowe.

Locality: Galapagos Is.

110. *Docophoroides brevis* (Dufour).

Philopterus brevis Dufour, 1834, Ann. Soc. ent. Fr., IV, p. 676, Pl. 21, f. 3.

Eurymetopus brevis (Dufour), Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 482.

E. brevis (Dufour), 1906, Trans. Amer. ent. Soc., XXXII, p. 320.

E. taurus Nitzsch, Kellogg and Paine, 1910, Ent. News, XXI, p. 125.

Recorded hosts: *Arenaria i. interpres* (Linn.); *Diomedea irrorata* Salvin; *Thalassarche nigripes* (Audubon); *Thalassarche immutabilis* Rothschild.

Probable true hosts: *Diomedea* spp. and *Thalassarche* spp.

Localities: Galapagos Is., Narborough I., Clarion I.; Laysan I.; Erben Bank.

HOST—PARASITE LISTS.

I. BIRDS RECORDED FROM ISLANDS OTHER THAN THE GALAPAGOS IS.

Hosts.	*Parasites.*
Spilopelia chinensis (Scop.).	*G. chinensis* Kellogg and Chapman.
Fulica alai Peale.	*R. advena* (Kellogg).
Pelagodroma marina passerina (Mathews).	*A. vagelli* (Fabricius). *S. pelagicus* (Denny).
Pterodroma neglecta (Schlegel).	*H. kermadecensis* (Johnston and Harrison). *G. fuscoclypeatus* (Johnston and Harrison).
Pterodroma rostrata (Peale).	*H. marquesanus* (Ferris).
Cookilaria hypoleuca (Salvin).	*A. vagelli* (Fabricius).
Thalassarche nigripes (Audubon).	*H. diomedeae* (Fabricius). *P. confidens* (Kellogg). *D. brevis* (Dufour).
T. immutabilis Rothschild.	*H. diomedeae* (Fabricius). *P. concinnus* (Kellogg and Chapman). *D. brevis* (Dufour).
Gygisterna sumatrana (Raffles).	*A. milleri* (Kellogg and Kuwana).
Onychoprion fuscata (Linn.).	*M. sternophilum* Ferris. *S. snyderi* (Kellogg and Paine). *D. birostris* (Giebel).
Melanosterna lunata (Peale).	*S. snyderi* (Kellogg and Paine). *D. birostris* (Giebel).
Anous stolidus (Linn.).	*C. discrepans* Kellogg and Chapman. *A. milleri* (Kellogg and Kuwana). *A. epiphanes* (Kellogg and Chapman). *D. separata* (Kellogg and Kuwana).
Pluvialis dominicus fulvus (Gmelin).	*C. brachysomum* Kellogg and Chapman. *A. timidus* (Kellogg). *P. conicus* (Denny). *D. oraria* (Kellogg).
Phaeopus phaeopus variegatus (Scop.).	*P. armatus* Johnston and Harrison.

	P. numeniicola Johnston and Harrison.
	D. oliveri Johnston and Harrison.
Heteractitis incanus (Gmelin).	*A. kilauensis* (Kellogg and Chapman).
	P. conicus (Denny).
Sula sp.	*P.* (*P.*) *sulae* (Rudow).
Fregata minor (Lesson).	*M. singularis* Kellogg and Kuwana.
	C. angulaticeps Piaget.
	P. (*P.*) *sulae* (Rudow).
	P. (*E.*) *gracilicornis* (Piaget).
Fregata minor strumosa Hartert.	*P.* (*E.*) *gracilicornis* (Piaget).
Asio flammeus (Pontopp.).	*C. brachysomum* Kellogg and Chapman.
Vini australis (Gmelin).	*E. denticulatum* Harrison.
Collocalia ocista Oberhosler.	*D. distinctus* Ferris.
Vestiaria coccinea (Forster).	*M. cyrtostigmum* Kellogg and Chapman.
	M. hilensis Kellogg and Chapman.
	D. diaprepes Kellogg and Chapman.
	D. stenozona Kellogg and Chapman.
Himatione sanguinea (Gmelin).	*M. cyrtostigmum* Kellogg and Chapman.
Chlorodrepanis virens (Gmelin).	*M. cyrtostigmum* Kellogg and Chapman.
	M. hawaiiensis Kellogg and Chapman.
Uroloncha punctulata nisoria (Temm. and Lang.).	*D. stenozona* Kellogg and Chapman.
Aplonis opaca (Kittl.).	*M. teraoki* Uchida.
A. atrifusca (Peale).	*M. buxtoni* Waterston.

Introduced host.

Sturnus vulgaris Linn.	*P. sturni* (Schrank).
	D. nebulosa (Burmeister).

Unplaced hosts.

Carpodacus mexicanus obscurus.	*C. discrepans* Kellogg and Chapman.
	M. conspicua Kellogg and Chapman.
Eos rubiginosa.	*E. denticulatum* Harrison.
Acridotheres tristis.	*M. invadens* Kellogg and Chapman. *L. minhaensis* Kellogg and Chapman. *D. minhaensis* Kellogg and Chapman.

II. BIRDS OF THE GALAPAGOS IS.

Hosts.	*Parasites.*
Diomedea irrorata Salvin.	*H. diomedeae* (Fabricius).
	P. confidens (Kellogg).
	D. brevis (Dufour).
Pterodroma phaeopygia (Salvin).	*H. diversus* (Kellogg).
	G. mirabilis Kellogg.
Puffinus obscurus subalaris Ridgway.	*M. narboroughi* Kellogg and Kuwana.
	M. numerosum Kellogg.
	P. minor (Kellogg and Kuwana).

	H. diversus (Kellogg).
	G. mirabilis Kellogg.
Procellaria tethys (Bonaparte).	*S. pelagicus* (Denny).
	P. becki Kellogg.
Oceanites gracilis. galapagoensis Lowe.	*P. platycephalus* (Kellogg and Kuwana).
	S. pelagicus (Denny).
	G. mirabilis Kellogg.
Phaëthon aethereus Linn.	*M. becki* Kellogg.
	S. phaethonus (Howard).
Pelecanus occidentalis Linn.	*C. unciferum* Kellogg.
Sula spp.	*M navigans* Kellogg.
	P. (*P.*) *minor* (Ewing).
	P. (*P.*) *sulae* (Rudow).
Nannopterum harrisi (Rothschild).	*P.* (*P.*) *nannopteri* (Ewing).
Fregata spp.	*M. aurifasciatum* Kellogg.
	C. angulaticeps Piaget.
	P. (*E.*) *gracilicornis* (Piaget).
Butorides sundevalli Reichenow.	? *D. paludicola* (Kellogg and Kuwana).
Phoenicopterus ruber Linn.	*C. heterosoma* Piaget.
? *Querquedula discors* (Linn.). or ? *Paecilonitta galapagensis* Ridgway.	*T. lituratum* Nitzsch. *T. querquedulae* (Linn.). *A. dentatus* (Scopoli).
Buteo galapagoensis (Gould).	*C. flavescens* Nitzsch.
	P. taurocephalus (Kellogg).
Haematopus palliatus galapagensis Ridgway.	*A. grandiceps* (Piaget).
	D. ridgwayi (Kellogg).
Creagrus furcatus (Neboux).	*S. gonothorax* (Giebel).
	? *S. melanocephala* (Nitzsch).
Sterna fuscata crissalis (Lawrence).	*M. singularis* Kellogg and Kuwana.
	S. albemarlensis (Kellogg and Kuwana).
	S. melanocephala (Nitzsch).
	S. peristictus (Kellogg and Kuwana).
	D. birostris (Giebel).
	D. lepida (Kellogg and Kuwana).
	D. obtusa (Kellogg and Kuwana).
Anous stolidus galapagensis Sharpe.	*M. fuscofasciatum* Piaget.
	M. singularis Kellogg and Kuwana.
	A. milleri (Kellogg and Kuwana).
	S. melanocephala (Nitzsch).
	D. separata (Kellogg and Kuwana).
Nesopelia g. galapagoensis (Gould).	*G. galapagensis* Kellogg and Kuwana.
	C. columbae (Linn.).
Coccyzus melacoryphus Vieillot.	*M. snodgrassi* Kellogg and Kuwana.
Asio galapagoensis (Gould).	*P. cursor* (Nitzsch).
Myiarchus magnirostris (Gray).	*R. angulatus* (Kellogg).
	D. galapagensis (Kellogg and Kuwana).
	D. vulgata (Kellogg).

Pyrocephalus nanus Gould.	*D. galapagensis* (Kellogg and Kuwana).
	D. vulgata (Kellogg).
	P. insulicola (Kellogg and Kuwana).
Progne modesta (Neboux).	*M. rustica* (Nitzsch).
	P. breviformis (Kellogg and Kuwana).
	P. domesticus (Kellogg).
Nesomimus macdonaldi Ridgway.	*M. galapagensis* Kellogg and Kuwana.
	M. icterum Kellogg.
	D. galapagensis (Kellogg and Kuwana).
N. melanotis (Gould).	*M. icterum* Kellogg.
	D. galapagensis (Kellogg and Kuwana).
	D. vulgata (Kellogg).
N. parvulus (Gould).	*M. icterum* Kellogg.
	P. galapagensis (Kellogg and Kuwana).
	D. galapagensis (Kellogg and Kuwana).
	D. vulgata (Kellogg).
Dendroica petechia aureola (Gould).	*R. angulatus* (Kellogg).
	D. interposita (Kellogg).
	D. vulgata (Kellogg).
Geospiza spp.	*M. albemarlei* Kellogg and Kuwana.
	M. galapagensis Kellogg and Kuwana.
	M. icterum Kellogg.
	P. galapagensis (Kellogg and Kuwana).
	P. insulicola (Kellogg and Kuwana).
	P. subflavescens (Geoffroy).
	D. galapagensis (Kellogg and Kuwana).
	D. vulgata (Kellogg).
Platyspiza crassirostris (Gould).	*M. icterum* Kellogg.
	D. galapagensis (Kellogg and Kuwana).
Camarhynchus spp.	*M. icterum* Kellogg.
	P. galapagensis (Kellogg and Kuwana).
	D. vulgata (Kellogg).
Cactospiza spp.	*M. albemarlei* Kellogg and Kuwana.
	M. icterum Kellogg.
	P. galapagensis (Kellogg and Kuwana).
	D. galapagensis (Kellogg and Kuwana).
	D. vulgata (Kellogg).
Certhidea spp.	*M. icterum* Kellogg.
	P. insulicola (Kellogg and Kuwana).

	D. galapagensis (Kellogg and Kuwana).
	D. vulgata (Kellogg).

Unplaced hosts.

Speotyto sp.	*P. syrnii* (Packard).
Corvus sp.	*C. subaequale* Nitzsch.
	P. corvi (Osborn).

Pacific Entomological Survey.
July, 1938.

PHILONTHUS EXPLANIPES NOM. NOV. (COL., STAPHYLINIDAE).

BY THE REV. C. E. TOTTENHAM, M.A., F.R.E.S.

Kraatz (1859, *Arch. Naturgesch*, **25**: 50) described a species of *Philonthus* from North India under the name *proximus*, pointing out how it differed from *Philonthus carbonarius*. The species known to Kraatz under the latter name, and described by him in 1857 (*Nat. Ins. Deutschl.*, **2**: 577), is the *chalceus* Stephens of the Junk *Col. Cat.* and the *proximus* Kraatz of Fowler. So far as I have been able to trace, Fauvel is responsible for identifying the Indian and European species as being identical. Under his description of *P. proximus* (1874, *Fn. Gallo-Rhen.*, **3**: 441), he says: 'Le *proximus* Kr., de l'Inde boréale, est identique au *succicola* Thoms., comme je m'en suis assuré sur un type.' On the strength of this statement, it would appear, the two species have been regarded as identical ever since. Perhaps Fauvel only saw a female of the Indian species and failed to appreciate the differences between it and the European species. An examination of Indian specimens proves without doubt that they are distinct from the European, and it is hard to see how some of the characteristics pointed out by Kraatz could have been ignored. The European species I refer to as *succicola* Thomson; the Indian species requires a name, since *proximus* was pre-occupied by Wollaston, and I call it *explanipes* nom. nov.

Kraatz said that the species differed from *succicola* by the slightly shorter elytra, by the abdomen[1] being a little more closely punctured and less shining, by the strongly dilated anterior tarsi of the male, and by the stronger emargination of the sixth ventral segment. Of these the most marked difference is that of the anterior tarsi of the male, which in *explanipes* are strongly dilated, but in *succicola* are simple (figs. 7 and 8). Another good character by which to distinguish the species lies in the shape of the head. In *explanipes* the head is more rectangular, and has the posterior

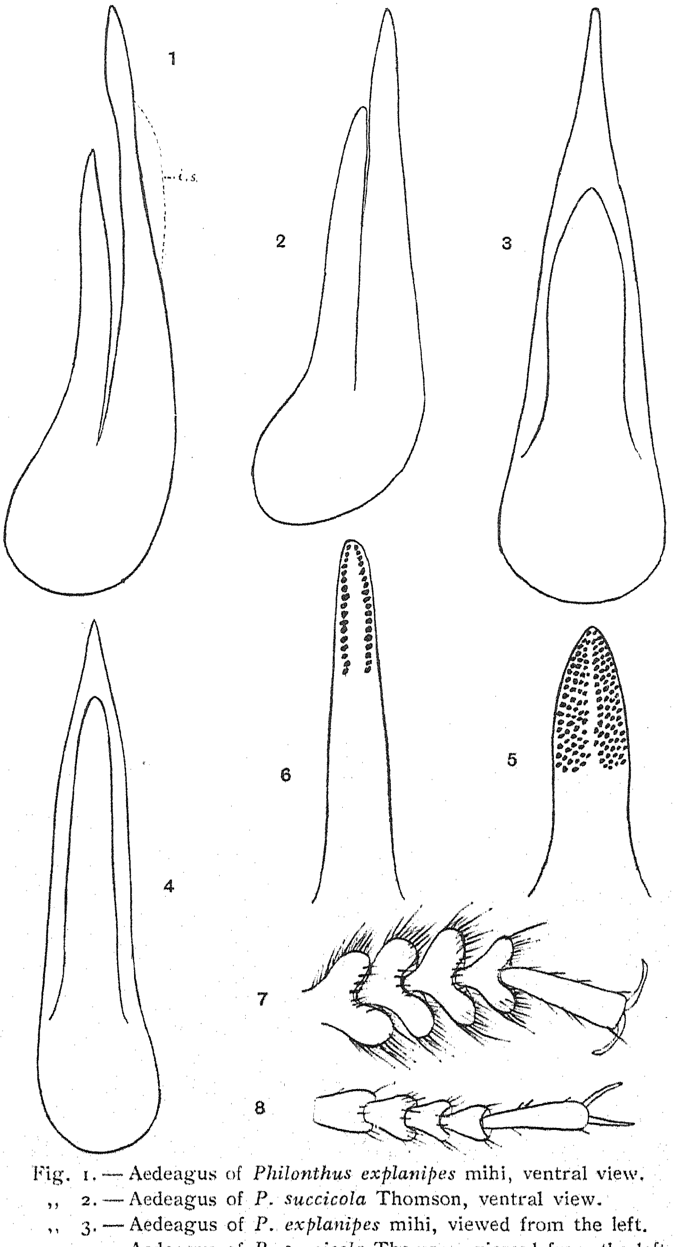


Fig. 1.—Aedeagus of *Philonthus explanipes* mihi, ventral view.
,, 2.—Aedeagus of *P. succicola* Thomson, ventral view.
,, 3.—Aedeagus of *P. explanipes* mihi, viewed from the left.
,, 4.—Aedeagus of *P. succicola* Thomson, viewed from the left.
,, 5.—Paramere of *P. explanipes* mihi, inner face.
,, 6.—Paramere of *P. succicola* Thomson, inner face.
,, 7.—Anterior tarsus of *P. explanipes* mihi, ♂.
,, 8.—Anterior tarsus of *P. succicola* Thomson, ♂.

angles much more marked; it is slightly wider at the posterior angles than in front, whereas in *succicola* it is a little narrower, with the posterior angles distinctly rounded. In both species, however, the head is very variable both in size and to a less extent in shape, but the differences referred to above hold good. When compared side by side it will be seen that there is a distinct difference in the micro-sculpture of the head in the two species, that of *explanipes* being much finer. As a result of this sculptural difference, the head of *succicola* has a distinct greenish reflex compared with the jet black of *explanipes*. In all the specimens of *explanipes* which I have examined the line at the base of the basal abdominal segments is scarcely produced in the middle, whereas in *succicola* it is distinctly produced. Yet another, and the most marked, specific character lies in the shape of the aedeagus. In *explanipes* the median lobe is broader at the base and more sharply narrowed and more pointed at the apex, and the paramere is very much shorter and broader and has a different arrangement of pegs (Figs. 1-6).

Philonthus succicola Thomson appears to be palaearctic in its range, whereas *P. explanipes*, so far as is known, is confined to North India.

88 Station Avenue,
W. Ewell, Surrey.
September 1st, 1939.

GNYPETA RUBRIOR N.SP.: A STAPHYLINID BEETLE NEW TO SCIENCE.

BY THE REV. C. E. TOTTENHAM, M.A., F.R.E.S.

There are in the British Islands two species of *Gnypeta* confused under the name *carbonaria* Mannerheim. Whether it is correct or not to regard *labilis* Erichson as a synonym of *carbonaria* Mannerheim it is impossible to say without seeing the type, but from Erichson's description of the colour of the legs, the synonymy is probably correct, and there seems no reason to doubt the accuracy of those authors who have accepted it. The second of our British species confused under the name *carbonaria* I call *rubrior* n.sp. The two species are so much alike as to render a detailed description of *rubrior* unnecessary, but it may be at once distinguished by the colour of the legs, which are entirely red, and by the puncturation of the head, thorax and elytra, which is much finer and more diffuse, this being especially appreciable on the head and thorax. In the colour of the legs *rubrior* resembles *velata*

Erichson, but that species is said to have the thorax and antennae shorter than in *carbonaria,* whereas in *rubrior* they are of the same length.

The species appears to be rare in this country. Out of many specimens examined, the only ones which proved to be *rubrior* were a few taken at Richmond (SR), 7.viii.1928, and one taken at Burford (OX), 5.ix.1933. *Gnypeta carbonaria* Mannerheim, on the other hand, is plentiful and widely distributed; I have series from South Heighton (EX), Selsey (WX), Leigh-on-Sea and Benfleet (SE), Richmond (SR), Highbridge and Blagdon (NS), Barnt Green and Marlcliff (WW), Rous Lench (WO), East Ardsley (WY), Pool and Bramham (MY).

I possess one specimen of *rubrior* from the Continent, taken by Herr P. Meyer at Stettin, Austria, 28.ix.1935.

I have not examined the spermatheca in the two species, but I can detect no difference in the aedeagus.

Type: ♂, Richmond, 7.viii.1928; ♀, Burford, 5.ix.1933, in my collection.

88 Station Avenue,
W. Ewell, Surrey.
September 1st, 1939.

SOME NEW SPECIES OF *XANTHOLININI* (COL., STAPHYLINIDAE).

BY THE REV. C. E. TOTTENHAM, M.A., F.R.E.S.

Gauropterus abactus n.sp.

Black, shining; elytra red; tarsi red; hind margins of apical abdominal segments and anal segment reddish.

Head quadrate, as wide as long (measured from base of mandible); sides straight, almost parallel, very feebly widened behind; posterior angles obtusely rounded to the neck; base at neck distinctly concave; eyes flat, small, one-third the length of the side of head behind; labrum long, strongly and bluntly tridentate on each side, deeply and narrowly emarginate between the apical pair of teeth. The vertex of the head is produced in a long narrow keel, reaching the base of the anterior pair of teeth of the labrum, where it is rectangularly truncate; on each side of this keel is a much shorter pointed projection. The central keel is much widened where it becomes part of the vertex of the head, so that it is separated from the lateral projections by a pair of deep parallel sulci, which extend to the level of the hind margin of the eye; after a short space each of these sulci is continued in the form of a long deep puncture. On each side, between the median sulcus and the eye, is another sulcus extending to the base of the head, consisting anteriorly of several long deep confused punctures and posteriorly of three similar but separate punctures. There is a pair of similar punctures within the lateral sulci near the base of the head, and another pair between these sulci and the punctures behind the median sulci. Three or four similar punctures extend from the inner hind angle of the eye to the posterior angle of the head. The inner margin of the eye is sulcate behind. Sides of the head with a few rather large scattered punctures. Antennae with the third segment much longer than the second; fourth to seventh segments very strongly transverse, slightly increasing in width. (The remainder of the antennae is wanting.) Thorax longer than broad, in front as wide as the head and much wider than behind; anterior margin convex; anterior angles marked, obtuse; sides strongly convergent behind, feebly rounded in front and feebly emarginate behind; posterior angles very obtuse; base rounded. The lateral row consists of three or four long, large, rather confused punctures; it is parallel to the side margin and extends about one-third the length of the thorax; close to it, on each side (interior to it) is another large puncture on the anterior margin. Scutellum with a few moderate punctures in the middle. Elytra fully as long as the thorax, at base and apex wider than the thorax at base and apex respectively, widened behind. Punctures shallow and rather indistinct, consisting of two series, the one sutural with about twelve small punctures, the other discal with about eight larger punctures; a few small scattered punctures between these series towards the apex; pubescence pale and very scanty. Abdomen diffusely punctured, the punctures being about the size of those of the scutellum; pubescence rather long, pale and scanty, but closer at the sides. Tibiae strongly spinose and pubescent; posterior tarsi with first segment short, the fifth nearly equal to the three preceding. Length 15 mm.

Differs from *Gauropterus methneri* Bernhauer in having the scutellum less punctate, the abdomen more diffusely, more irregularly and slightly more finely punctured, the sulci on the head parallel; the most obvious difference lies in the puncturation of the sides of the head, which is fine and remote, whereas in *methneri* the sides are punctured with large coarse hollows.

S. Rhodesia: Mt. Selinda, Nov.-Dec., 1930 (*R. H. R. Stevenson*). Type (unique) in my collection.

Gauropterus adjacens n.sp.

In size, colour and general appearance very like the preceding species, from which it differs in the puncturation of the elytra, the shape of the thorax, and particularly the form of the labrum and the form and sculpture of the head.

The punctures of the elytra are a little more numerous and distinct than in *G. abactus*; the discal series consists of about twelve punctures, and the sutural series consists of two irregular rows of about twelve punctures each. The thorax is a little wider, with the sides straight and less sinuate posteriorly, the anterior margin is less rounded, and the anterior angles are much more marked and rectangular: the lateral series of punctures is irregular and shows a tendency to be double, and there are several punctures along the anterior margin. The head is more quadrate with the posterior angles very marked and rectangular. The labrum is comparatively broadly and shallowly emarginate in the middle, and the teeth are smaller, there being two on each side instead of three. The head is only shortly and broadly produced in the centre, and the lateral projections are blunter. The median sulci are shorter and finer, and the lateral sulci are less distinct. The latter are composed of several punctures and extend in the form of punctures to the base of the head, but the punctures are in two or three rows in this species; the punctures are elongate, but very much smaller than in *G. abactus*. The series from the eye to the base of the head is much more numerous and composed of much smaller punctures. The sides of the head are much more closely punctured. The abdominal puncturation is a little stronger and more remote.

S. RHODESIA: Sanyati Valley, Sept.-Oct., 1925 (*R. H. R. Stevenson*) (type, ♂); Penkridge, 11.i.1938 (*R. H. R. Stevenson*) (paratype, ♀); both in my collection.

Nudobius morosus n.sp.

In general appearance this species is something like *Nudobius pictipennis* Fauvel, from which it differs by its much larger head, more strongly and closely punctured elytra and the absence of the pale margins of the elytra. It agrees so closely with the description of *Nudobius quadriceps* Cameron (Rev. zool.-bot. Afr., 1929, XVIII: 5) that it will suffice only to point out the differences.

In size it is much larger, being 11 mm. in length, whereas *N. quadriceps* is only 7.5 mm. The head is very slightly broader than long, instead of longer than broad; the surface of the head is smooth and shining, and lacks the ground sculpture of *quadriceps*. The dorsal series of thoracic punctures consist of four punctures each, the anterior two being widely separated from the posterior two in each series.

S. RHODESIA: Vumba Mts., x.1926. Type in Rhodesian Museum, paratype in my collection.

Leptacinus persimilis n.sp.

Black, shining; knees and tarsi red; antennae red, except the basal segment, which is black, and the third segment, which is blackish.

Head quadrate, a little longer than broad, sides parallel, posterior angles rectangularly rounded, base nearly straight; eyes occupying little less than one-third the sides of the head; median sulci feebly convergent posteriorly, extending to the level of the middle of the eyes, each with three distinct punctures; head with a smooth longitudinal space in the middle, on either side of which, between the eyes, it is distinctly and sparingly punctate, the punctures showing a tendency to be placed in two irregular rows; the sides of the head behind the eyes more sparingly and less strongly punctured. Ground sculpture strong, transverse. Antennae with the second segment about equal to the third but much wider; fourth and fifth segments rather moniliform, sixth to tenth almost equal to one another in width, distinctly transverse; eleventh short. Thorax in front distinctly wider than the head, feebly narrowed behind, considerably longer than broad; anterior margin rounded, anterior angles obtusely rounded; sides straight; posterior angles very obtusely rounded, posterior margin rounded; dorsal series consisting of six or seven punctures; laterally with seven or eight punctures placed more or less in a double irregular row; ground sculpture similar to that of head. Scutellum with strong punctate ground sculpture, and two or three variable large punctures. Elytra as wide as the thorax, longer than broad; punctures shallow, in size about equal to those of the head, rather seriate; disc less punctate, sides more closely punctate. Abdomen almost smooth, very finely and very sparsely punctate at sides; pubescence short, scanty, yellowish.

CHILE: Valparaiso, v.1936 (*Dr. E. Reed*); abundant, flying, together with a species of *Bledius*. Type and paratypes in my collection.

This species is very closely allied to *L. socius* Fauvel, from which it differs in the generally lighter colour of the antennae, longer head, which is not at all widened behind, more parallel-sided thorax, longer elytra, and more finely punctured abdomen. These characters are in themselves all a little variable. I have not yet had the opportunity to examine the genitalia of the two species.

88 Station Avenue,
West Ewell, Surrey.
September 14th, 1939.

DESCRIPTION OF THE FEMALE OF *XYLOTA XANTHOCNEMA* COLLIN (DIPT., SYRPHIDAE).

BY R. L. COE.

Xylota xanthocnema was described recently from the male sex by Mr. Collin (1939, *Ent. Mon. Mag.* **75**: 108). The capture of both sexes at Chelsham (Surrey) on July 26th of this year has enabled the present writer to describe the female. The species occurred in company with *X. sylvarum* sitting on bramble foliage in the sunshine, one male and two females being taken within a very short space of time. A further example of the female has now been kindly loaned to me by Mr. E. Rivenhall Goffe, who took it at Mopley Pond (Hants) on July 26th, 1936. Mr. Goffe states that the species is evidently uncommon at that locality, as he has not seen others there since. The species has now been recorded from widespread localities in the south of England on dates extending from July 16th until the second week of August.

As in male *xanthocnema*, the tibiae are entirely yellow, but the yellow ground colour beneath the golden-haired side spots on third abdominal tergite is rather less obvious than in that sex. Thorax and scutellum more shining than in female *sylvarum*. Pubescence shorter, especially on hinder part of thorax, on scutellum, and on jowls below eyes, than in female *sylvarum*. Steel-coloured patches on second abdominal tergite conspicuous as in the male, but with the median dark line not nearly extending to posterior margin. First tergite entirely steely, shining, while third tergite has steely side patches extending over more than its basal half. No steely markings occur on the abdomen in female *sylvarum*.

British Museum (Nat. Hist.),
London, S.W.7.
August 31st, 1939.

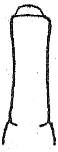
A SECOND BRITISH RECORD OF *RHINGIA ROSTRATA* LINNAEUS (DIPT., SYRPHIDAE): ITS DISTINCTIONS FROM *R. CAMPESTRIS* MEIGEN.

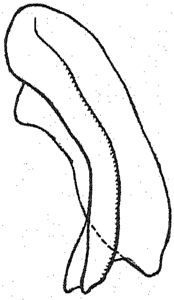
BY R. L. COE.

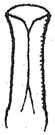
Rhingia rostrata L. owes its inclusion in the British list of Diptera to the capture of a single female by Mr. R. C. Bradley at Barmouth, Merionethshire, on August 25th, 1895. It is now recorded for the second time by the present writer, who took both sexes this season at Chelsham, Surrey. Since the species was first known to occur in this country, many specimens have been classified as *rostrata* in collections of British Diptera, but these have proved on examination to be immature examples of our other representative of the genus, *R. campestris,* which occurs abundantly throughout Britain. In both species the abdomen and legs are mainly yellowish-orange, and confusion is likely to arise, particularly in the male. As Mr. Verrall points out (1901, *British Flies,* 8: 478), *R. rostrata* is altogether paler, but while this difference is quite obvious in fresh specimens, the identification of dried ones is often rendered more difficult by internal discoloration.

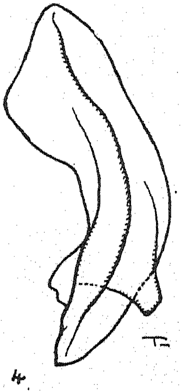
In the male sex, *R. rostrata* may be distinguished as follows:

Shorter pubescence on thorax, scutellum and abdomen, more extensively grey-dusted thorax, which is consequently less shining. Blackish markings on abdomen restricted to disc of first tergite and a slight longitudinal line on basal half of disc of second tergite. Pre-genital (8th) sternite yellow-haired, this being black-haired in *campestris.* Side-margins of abdomen continuously orange, partly black-haired. In the male *campestris* these are continuously black and wholly yellow-haired. Coxae rather blackish, femora more or less darkened at base only, tibiae entirely orange, tarsi orange except along dorsal surface of


1


2


3


4

FIGS 1, 3.—Ejaculatory hood of penis-sheath, ventral aspect: 1, *Rhingia rostrata* Linnaeus; 3, *R. campestris* Meigen.
FIGS. 2, 4.—Right style of tenth tergite, ventral aspect: 2, *R. rostrata* L.; 4, *R. campestris* Mg.

hind pair, which is blackish. The genitalia present several structural differences. Styles (the large paired appendages of the tenth tergite) simple as in *campestris* (figs. 2, 4), but less strongly incurved, especially on the ventral side, and the tiny black hairs occurring internally towards their tip stronger and more dense. Viewed ventrally, the two pairs of lobes (superior and inferior) attached to the penis sheath do not exhibit any marked difference. From the same aspect, the ejaculatory hood is seen to be simply truncate at its apical extremity (fig. 1), as contrasted with that of *campestris*, which, besides other differences, terminates on its ventral side with a V-shaped incision (fig. 3). The shape of the anal cerci is similar in both species, but the scattered bristles occurring externally on the apical half of these structures are stronger and darker in *rostrata*.

The female of *R. rostrata* presents abundant differences :

The frons is completely dusted grey, instead of shining on the ocellar triangle and often down a middle line as in *campestris*. Thorax slate-coloured, more dusted, hardly shining. Pubescence on thorax very short, black except at extreme front, as contrasted with rather long and mainly pale in *campestris*. Notopleurae mainly black-haired. Abdomen pale orange, except for a small blackish patch at base of disc of first tergite and a narrow, often faint, longitudinal black streak on basal half of disc of second tergite. Sidemargins of abdomen continuously orange. Third and fourth tergites entirely clothed with short black hairs, sidemargins continuously black-haired after basal half of second tergite. In female *campestris* the black hairs on abdomen are restricted to discs of second and third tergites, the blackish sidemargins being wholly pale-haired. Legs orange, except coxae and dorsal surface of hind basal tarsal joint, which are blackish.

The sensory pit present in both sexes on the third antennal joint of the allied genus *Brachyopa*, the shape of which Mr. Collin has shewn to be a sound specific character in that genus, is clearly seen in our two species of *Rhingia*. Specific distinction is not, however, provided in this instance, as either one or two small rounded pits may be apparent in examples of both species.

A recent examination of the long series of specimens determined as *R. campestris* in the European Collection of *Syrphidae* at this museum, revealed the inclusion of four males and five females of *rostrata*, an immature example of either sex standing at that time over the name-label of the latter species. The specimens thus relegated to their correct position were captured in France and Brittany, and were taken on the same dates and in the same localities as various *campestris* in the collection. It therefore appears that *R. rostrata* is less rare on the continent, in some parts at least, than with us.

In these continental examples of *R. rostrata* the squamae are entirely pale-haired as in all *campestris* examined, but in the British male and several of the females the short hairs fringing the upper lobe are blackish. Comparison of the genitalia of the continental and British *rostrata* reveals no point of difference, however, and apart from this occasional variation in the colour of the squamal hairs they agree completely.

As previously mentioned, the series of *R. rostrata* now in the British Collection at this museum were captured by me at Chelsham, Surrey. The species occurred, with *R. campestris*, over mixed vegetation in a marshy clearing in a wood. Visits were made to the habitat on the following dates in 1939: 11.vi; 16.vii; 13.viii; 15.viii. On the first visit *campestris* was plentiful, while two females of *rostrata* were taken. On the second visit both species had disappeared. On the third visit *campestris* was again abundant, while two females of *rostrata* were captured. On the fourth visit *campestris* was still abundant, four females of *rostrata* were taken, and at the end of a whole day's continuous search a single male of the latter species was captured.

The metamorphoses of flies of this genus are unknown, but the suggestion put forward in print that they take place in cow-dung is obviously erroneous, as the habitat of the flies is frequently remote from meadows where cattle occur. It seems likely that they breed in decaying vegetation in moist places in woods, etc. The female probably drops her eggs while hovering low over the ground, as is the common habit of that sex.

British Museum (Nat. Hist.),
London, S.W.7.
August 31st, 1939.

A Note on Pimpla oculatoria Fab. (*Hym., Ichneumonidae*).—On July 17th, 1939, a mass of golden silk attached to a rose leaf was brought to me for identification. I found it to be two egg-cocoons of a spider, and on teasing apart the threads to exhibit the eggs within we found among the latter a small larva, scarcely larger than one of the eggs and of the same purplish colour. Not wishing to risk damage, the matter was not pursued further, but the whole put into a glass tube. On again examining it on 3rd July, I was surprised to find that the larva had now spun its cocoon, of large size and loose texture, but of the same golden colour though of much finer thread than that of the spider. Though this was too dense to allow of a clear view of the contents, enough could be seen to recognise a white pupa with the eyes just beginning to darken. From the surviving eggs of the same cocoon the young spiders had now hatched and proved to be a species of *Epeira*, and from the description of the egg-cocoon would seem to be *E. cucurbitina* Cl. (Staveley, 1866, British Spiders). On July 30th the pupa was still white, but the eyes had darkened considerably, appearing to be larger. On August 4th the whole insect appeared dark within the cocoon and the slender legs and antennae could be seen to move, showing that the ichneumon was now mature, though it did not emerge from the cocoon until the 6th. The other egg-cocoon could now be seen to contain a dark compact mass which, on being teased open, was found to be composed of the young spiders, which, however, showed no tendency to leave the cocoon.—K. G. Blair, 11 Durrington Park Road, S.W.7: *August 27th*, 1939.

ON SOME NEW AND LITTLE KNOWN SOUTH AMERICAN *NEOELMIS* MUSGRAVE (COLEOPTERA, ELMIDAE).

BY H. E. HINTON, PH.D.

In this paper two new species and a new subspecies of *Neoelmis* are described and figured. In addition, the little-known Venezuelan species, *N. simoni* (Grouv.), is re-described and figured. Illustrations were made with the aid of a camera lucida; lines next to figures refer to a length of 0·20 mm.

Neoelmis grossa sp.n.

(Figs. 1-6.)

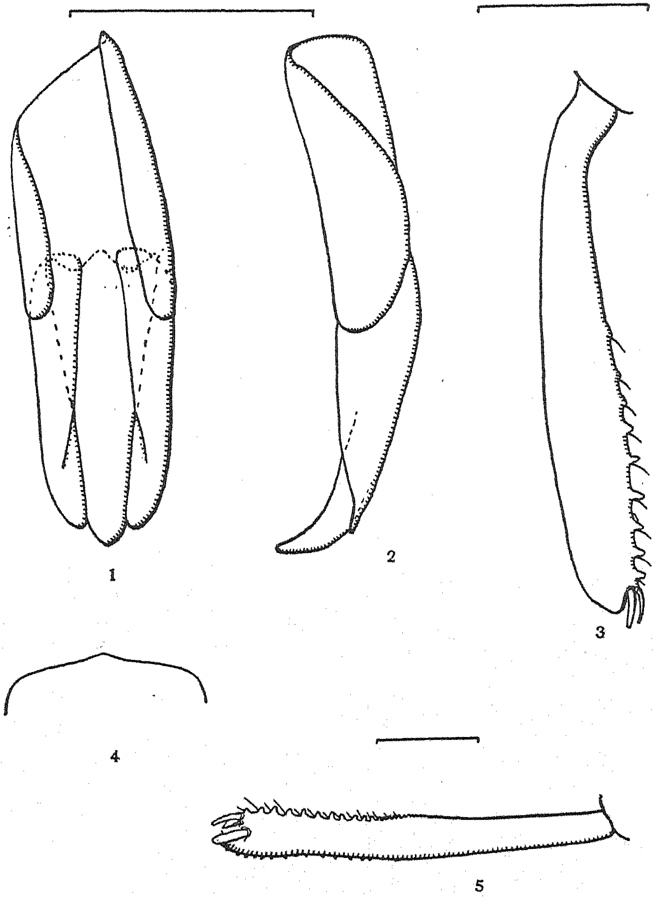
Male: Length, 2.5-2.7 mm.; breadth, 0.95-1.08 mm. Elongate, subparallel, moderately convex. Cuticle shining, black to dark rufo-piceous; antennae, mouth-parts and legs paler rufo-piceous. Externally similar to *N. thoracica* (Grouv.) except as follows:—

(1) It is longer, 2·5—2·7 mm. : 1·91—2·44 mm.; (2) the head is more densely sculptured, being nearly everywhere densely asperate or alutaceous and also with punctures which are nearly as coarse as facets of eyes and are separated by one to two diameters; (3) the pronotum (longer than greatest breadth, which is at basal third, 0·82 mm. : 0·80 mm.; and with base broader than apex, 0·76 mm. : 0·52 mm.) has a large moderately gibbous area on basal seventh in front of scutellum, whereas in *thoracica* the pronotum is here only feebly convex and there is no trace of a gibbosity; (4) the scutellum is moderately strongly convex instead of flat; (5) the disk of the elytra is moderately convex, its highest point being the sutural interval, whereas in *thoracica* the disk of the elytra is very nearly flat; (6) the hypomera are everywhere densely asperate except for a middle area extending behind apical depression, whereas in *thoracica* not only is there a similar non-asperate area, but the middle region in front of depression is also non-asperate almost to apical margin; (7) the anterior margin of the prosternum (fig. 4) is obtusely angulate to narrowly rounded at middle, while in *thoracica* it is truncate to feebly and arcuately emarginate at middle; (8) the sides of the prosternum on posterior two-fifths are without tomentum, whereas in *thoracica* this region is densely tomentose; (9) the apical half of ventral side of middle and hind femora is sparsely or non-tomentose, whereas in *thoracica* the entire middle and hind femora are clothed with dense tomentum; (10) the inner side of middle tibia (fig. 3) has numerous stout teeth which are absent in *thoracica*; (11) the inner side of hind tibia (fig. 5) is toothed, while in *thoracica* there are no teeth here; and (12) the anterior margin of the alimentary canal (fig. 6) has one dorsal and two lateral well-developd caeca (9 specimens have been examined for this character), while in *thoracica* only the lateral caeca are present (7 specimens have been examined for this character).

Female: Externally similar to male except as follows: (1) the inner side of the middle tibia is without teeth; and (2) the inner side of the hind tibia is without teeth.

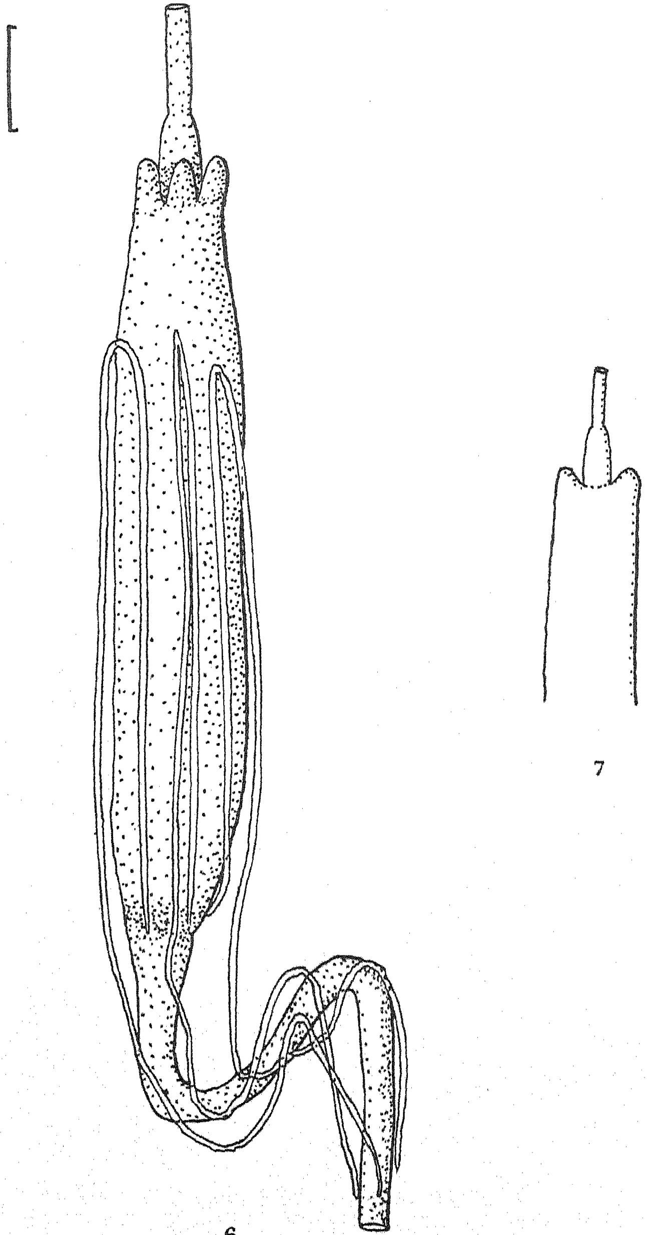
Type: A male in the collection of the British Museum (Nat. Hist.). Bolivia: Yungas Valley, Chaco, alt. about 6,500 ft., 5-7.vi.1937 (*H. E. Hinton*).

Paratypes: Four males and four females with same data as type, but four were collected as high as 10,000 ft. in the Yungas Valley on 24.vi.1937.



Figs. 1–5.—*Neoelmis grossa* sp.n. 1, dorsal view of male genitalia; 2, left lateral view of same; 3, lateral view of inner side of middle tibia of male; 4, ventral view of anterior margin of prosternum of male; 5, lateral view of inner side of hind tibia of male.

Comparative notes: This species is also closely related to *N. simoni* (Grouv.) of Venezuela. There is one male of *simoni* before me, and it differs from those of *grossa* as follows: (1) The pronotum is convex but not gibbous in front of scutellum; (2) the scutellum is flat instead of moderately strongly convex; (3) the middle anterior margin of the prosternum has a large, acute tooth projecting vertically downwards, whereas in *grossa* the middle



Figs. 6–7.—6, dorsal view of alimentary canal of *Neoelmis grossa* sp.n.; 7, dorsal view of anterior margin of mid-gut of *Neoelmis apicalis angusta*, subsp.n.

anterior margin of the prosternum is narrowly rounded or at most obtusely angulate; (4) the inner margin of apex of front tibia is toothed (fig. 10), whereas in *grossa* it is not; and (5) the male genitalia (fig. 9) are differently formed.

Neoelmis abdominalis sp.n.

(Fig. 8.)

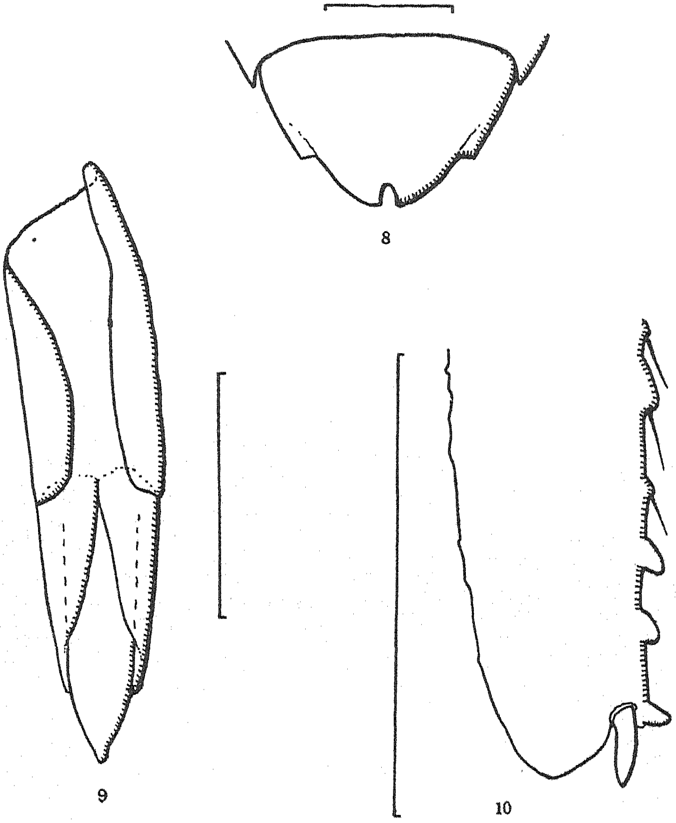
This species appears to be closely related to *N. thoracica* (Grouv.), *N. simoni* (Grouv.) and *N. grossa* Hinton. Its chief distinguishing features are as follows :—

FEMALE : Length, 2·19 mm. ; breadth, 0·76 mm. Elongate, subparallel, moderately feebly convex. Cuticle shining and dark to moderately pale rufo-piceous. *Pronotum* across broadest point, which is at basal third, as broad as long (0·63 mm.) and base broader than apex (0·56 mm. : 0·43 mm.). Sublateral carinae prominent, sharp, and extending from base very nearly to apex. Near base on each side of scutellum with a moderately deep, oval depression which is about two-thirds as broad as scutellum; and on each side near base at inner side of sublateral carina with a similar but much deeper depression. Disk with a broad, moderately deep, triangular depression extending from apical transverse impression to basal fourth, the base of this nearly equilateral triangle being contiguous to transverse impression; surface of depression very densely set with punctures two-thirds as coarse as facets of eyes. *Elytra* more than twice as long as pronotum (1·58 mm. : 0·63 mm.) and broadest point, at about apical two-fifths, broader than base (0·76 mm. : 0·60 mm.). Disk with deep, round punctures one-half to two-thirds as broad as intervals and separated longitudinally by one-half to two-thirds their diameters; at apical two-fifths these punctures become suddenly much finer. *Scutellum* subovate, nearly flat. *Prosternum* with posterior two-fifths of sides tomentose; anterior three-fifths (not including process) gradually and moderately strongly bent ventrally when seen from side; prosternal carinae fine, inconspicuous, present on basal two-fifths, and at base, where they are four-fifths as wide apart as basal sides of process, slightly wider apart than anteriorly; prosternal process narrow (0·109 mm. between front coxae), nearly parallel, apex broadly rounded, and sides feebly raised; sides on basal two-fifths near sterno-tergal suture with a scarcely noticeable ridge; anterior margin of prosternum feebly rounded, nearly truncate. Hypomera with a few fine punctures except near basal margin and at anterior margin, where it is asperate. Metasternum with median longitudinal line 0·03 mm. broad posteriorly, anteriorly narrower, and extending to anterior margin. Disk with posterior four-fifths moderately feebly depressed at middle; surface with punctures nearly as coarse as facets of eyes and separated by two to four diameters. *Abdomen* with middle of first sternite moderately depressed on anterior half and with anterior sides strongly raised; first sternite without carinae. Fifth sternite with apex narrowly emarginate (fig. 8). Surface on anterior third of first sternite very densely punctate, elsewhere and that of other sternites where non-tomentose punctate like metasternal disk.

MALE : Unknown.

Type : A female in the collection of the British Museum (Nat. Hist.). Columbia : Bogota.

Comparative notes: From all other known species of the genus this may be distinguished by the broad depression behind apical transverse impression of pronotum and by the deeply and narrowly emarginate apex of the fifth abdominal sternite.



Figs. 8–10. — 8, ventral view of fifth abdominal sternite of female of *Neoelmis abdominalis* sp.n.; 9, dorsal view of male genitalia of *N. simoni* (Grouv.); 10, lateral view of inner side of front tibia of same species.

Neoelmis simoni (Grouvelle).

(Figs. 9-10.)

1889. *Helmis simoni* Grouvelle, *Ann. Soc. ent. Fr.* (6), **9**: 164, t. 6, f. 8.

1936. *Neoelmis simoni* Hinton, *Ent. mon. Mag.*, **72**: 5.

In the collections of the British Museum there is a paratype of this species from the type locality: Venezuela: Colonia Tovar, 1.ii.1888 (*Simon*). The essential specific characters are as follows:—

Male: Length, 2·15 mm.; breadth, 0·78 mm. Elongate, subparallel, feebly convex. Cuticle shining and moderately dark rufo-piceous. *Pronotum* in front of scutellum moderately strongly convex though with a short (0·04 mm. long) transverse basal area quite flat and convex area in front of scutellum feebly depressed at middle; on each side of scutellum near base of pronotum without the usual oval depression of this genus. Sublateral carinae prominent, sharp, and extending from base nearly to apex. *Prosternum* without tomentum on sides; anterior three-fifths (not including process) gradually and moderately bent ventrally when seen from side; prosternal carinae very fine, scarcely noticeable, and at base, where they are nearly as wide apart as basal sides of process, slightly wider apart than anteriorly; prosternal process narrow (0·109 mm. between front coxae), parallel, posterior margin broadly rounded, and at sides broadly and feebly raised so that middle appears longitudinally channelled; sides on basal two-fifths with a ridge parallel to sterno-tergal suture and nearer to this than to carinae, this ridge being broader and half again as high as sterno-tergal suture; anterior margin feebly, broadly rounded and on middle with a subacute tooth directed vertically downwards, this tooth being 0·047 mm. long and 0·027 mm. broad at base; surface punctate at middle, and sides for the most part densely asperate. Hypomera with surface, except on middle region behind depression where it is finely punctate, very densely and rather coarsely asperate. Metasternum with median longitudinal line extending to anterior fifth and on posterior three-fifths 0·06 mm. broad and two-thirds as deep as broad; posterior three-fifths of middle metasternal disk feebly depressed; surface of disk with punctures as coarse as facets of eyes and separated by two to four diameters. *Abdomen* with middle of first sternite not depressed and without carinae at sides; apical middle of fifth sternite feebly and broadly depressed and apical margin feebly, broadly, arcuately emarginate. *Legs* with inner apex of front tibia (fig. 10) with three teeth and inner apical half of middle and hind tibiae with a row of short, stout teeth. *Genitalia* as figured (fig. 9).

Comparative notes: The males may be separated from those of all other species by the teeth on the front tibia, and from all those not having a depression on each side of metasternal disk by the tooth on the middle anterior margin of the prosternum.

Neoelmis apicalis angusta, subsp.n.

(Fig. 7.)

Male: Length, 1.83 mm.; breadth, 0.63 mm. Elongate, moderately convex, subparallel. Cuticle shining and dark rufopiceus; antennae, mouth-parts, and legs paler. Externally similar to *N. apicalis apicalis* (Sharp) except as follows:—

(1) The prosternal carinae are very indistinct, whereas in *apicalis apicalis* they are distinct; (2) the oval depression on each side of metasternal disc is about a third longer than broad and is separated by a distance equal to its diameter from the hind coxa, whereas in *apicalis apicalis* it is nearly round and is separated by a distance equal to two-thirds its diameter from hind coxa; and (3) the mesal basal margins of the parameres of the male genitalia are not contiguous, whereas in *apicalis apicalis* (Hinton, 1936, *Trans. R. ent. Soc. Lond.*, **85**: 426, fig. 22), they are.

Type: A male in the collection of the British Museum (Nat. Hist.). Peru: Naña, alt. 1,300 ft., 19.iii.1937 (*H. E. Hinton, F. Woytkowski*).

Paratypes: Four with same data as type; eight, Peru: Chosica, alt. 3,000 ft., 20.iii.1937 (*H. E. Hinton, F. Woytkowski*); six, Bolivia: Yungas Valley, Chulumani, 9-10.vi.1937 (*H. E. Hinton*); and one, Bolivia: Yungas Valley, Puente de la Via, alt. about 5,000 ft., 12-13.vi.1937 (*H. E. Hinton*).

Comparative notes: A key to separate the species of *Neoelmis* which have a depression (usually oval or irregular) on each side of metasternal disk is as follows:—

1. Species over 3·0 mm. long .... 2.

– Species under 2·5 mm. long .... 3.

2. Scutellum strongly convex. Males with the anterior prosternal tooth 0·07 mm. long, directed vertically downwards, and as long as broad; first abdominal sternite with only the anterior part of the middle concave; first abdominal sternite with a discrete tubercle on each side of middle on posterior sixth; inner apex of front tibia not gibbous; genitalia with apex of median lobe feebly spatulate. Females with carina of first abdominal sternite absent. Brazil .... *N. prosternalis* Hinton.

– Scutellum only feebly convex. Males with anterior prosternal tooth 0·10 mm. long, directed posteriorly, and not more than half as long as broad; first abdominal sternite with entire middle concave; tubercles of first abdominal sternite united to lateral carinae; inner apex of front tibia longitudinally gibbous; genitalia with apex of median lobe evenly narrowed. Females with carinae of first abdominal sternite complete. Brazil ... *N. giga* Hinton.

3. Prosternal carinae parallel and separated by a distance about equal to breadth of process near base; prosternum with a distinct ridge on each side parallel to and between prosternal carina and sterno-notal suture ... 4.

– Prosternal carinae converging in front so that while at base they are separated by a distance about equal to breadth of process, at apex they are separated by only half or less than half this distance; prosternum on each side without a distinct ridge. Texas .... *N. caesa* (Lec.).

4. Prosternal carinae distinct. Metasternum with depression on each side nearly round and separated from hind coxa by a distance equal to two-thirds its diameter. Male genitalia with basal margins of parameres contiguous mesally. Mexico, Gautemala .... *N. apicalis apicalis* (Sharp).

– Prosternal carinae indistinct. Metasternum with depression on each side about a third longer than broad and separated by a distance equal to its diameter from hind coxa. Male genitalia with basal margins of parameres not contiguous mesally. Peru, Bolivia ... *N. apicalis angusta* subsp.n.

Department of Entomology,
British Museum (Nat. Hist.),
London, S.W.7.

September 9th, 1939.

Diptera on the summit of Snowdon, Carnarvonshire.—On August 14th last I had an unexpected experience of Diptera swarming round the cairn and peak of Snowdon (3,560 ft.). It was a very hot, still day and there were great numbers of tourists on the mountain. The picnics had attracted several herring-gulls and the more respectable ravens were seen leaving for quieter regions. The flies were innumerable and it was difficult to keep them off our food as we ate it. To my surprise they were practically all Empididae, and a single

Dolichopodid visited my sandwiches with them. I took a short series and they turned out to be *Hilara chorica* Fall. and *Dolichopus rupestris* Hal. I have never seen any *Hilara* in such great numbers, even by water. Of the ten specimens I took, four were males and six females. The *D. rupestris* was a male. Four days later, on Cader Idris, under very similar conditions, not a single specimen of either species was to be seen.—L. W. GRENSTED, Oriel College, Oxford: *September* 13*th*, 1939.

ITHYTRICHIA CLAVATA MORTON (TRICH., HYDROPTILIDAE) NEW TO BRITAIN.

BY PROFESSOR L. W. GRENSTED, D.D., F.R.E.S.

On August 23rd last my son, A. D. Grensted, at the very end of his summer holiday and of his collecting in North Wales for this year, took a single specimen of an *Ithytrichia* by the stream at Llanbedr, Merioneth. This was sent to the British Museum (Natural History), and has now been determined by M. E. Mosely as *Ithytrichia clavata* Morton, a species new to Britain. This name must therefore now be added to the list given by Mosely (1939, *The British Caddis Flies,* London). It is to be hoped that more material will be forthcoming later, but the species is evidently not easy to find. It was the only specimen taken in about two hours' collecting, spent in sweeping the trees and banks of the stream, which is one of the larger fast mountain streams of the North Wales coast.

Previous collecting has only produced very few specimens, but these show a very wide distribution, including both North America, from which it was first described by Morton (1905), and Western Europe. After its first discovery in America the species was taken by Tjeder (1930) at Falun in Sweden, and subsequently Mosely himself (1935) took a single male near Toulouse.

The species can only be distinguished from the common *Ithytrichia lamellaris* Eat. by a detailed examination of the genitalia, in which there are several differences, not easy to describe briefly but readily appreciated from a figure. A full description, with very complete figures for both species, is given in Tjeder's article, which is written in English and easily accessible to collectors.

REFERENCES.

MORTON, K. J. 1905. *Bull. N.Y. St. Mus.,* **86**: 67-9; pl. 14, f. 14 and 15; pl. 15, f. 35.
MOSELY, M. E. 1935. *Entomologist,* **68**: 193, 207.
TJEDER, B. 1930. *Ent. Tidskr.,* **51**: 135-6, pl. 1, f. 1-8.

Oriel College, Oxford.
September 13*th*, 1939.

THE BELGIAN CONGO SPECIES OF THE GENUS *DICRANA* Burr (DERMAPTERA: PYGIDICRANIDAE).

BY W. D. HINCKS, M.P.S., F.R.E.S.

The following notes are extracted from a revision of the Dermaptera of the Belgian Congo on which the writer has been working for some time. Owing to professional duties this work must now be indefinitely postponed.

Key to Belgian Congo Species of *Dicrana* Burr, 1908 (emend. 1915).

1. Head black, tegmina and wings chestnut, abdomen black; ninth sternite of male excised mesad, of female entire; forceps stout, trigonal, depressed and tapering in both sexes; metaparameres slightly longer than bifid transverse lobe, a little swollen before apex. Length 30-35 mm. .... *biaffra* (Bormans, 1903).

—. Coloration not as above; head, pronotum, tegmina or abdomen more or less spotted .... 2.

2. Transverse inner lobe of metaparameres not bifid at apex; forceps with numerous long hairs. Length 23 mm. (General appearance similar to *separata*) .... *frontalis* (Kirby, 1903).

—. Transverse inner lobe of metaparameres bifid at apex .... 3.

3. Apex of metaparameres drawn out to a fine point; bifid transverse lobe narrow, parallel-sided and straight; pronotum broader, yellowish, with four black spots; wings absent; tegmina much reduced; legs banded with black; male ultimate tergite without lateral keel; male ninth sternite emarginate, of female entire; forceps stout, trigonal, contiguous and nearly straight in both sexes. Length 26-30 mm. .... *wigginsi* Burr, 1914.

—. Apex of metaparameres not drawn out to a fine point; pronotum narrower; legs not banded with black .... 4.

4. Metaparameres gradually tapering from base to apex, longer than bifid lobe; wings and tegmina either fully developed or reduced; ninth sternite in male with small median emargination, in female entire; ultimate tergite of male with lateral keels; forceps of the male with branches depressed, dilated and approximate at extreme base, gently arcuate, armed with obtuse crenulate tooth near apex of inner margin; female forceps simple, trigonal. Length 22-25 mm. .... *separata* Burr, 1908.

—. Metaparameres either shorter than inner lobe or swollen just before apex; tegmina and wings fully developed .... 5.

5. Metaparameres pointed, shorter than inner lobe; tegmina brownish with large, diffuse yellow spot; penultimate sternite entire in both sexes; male forceps short, strongly arcuate, dilated before apex. Length 33-35 mm. .... *bettoni* (Kirby, 1903).

—. Metaparameres swollen before apex; tegmina brownish with oblique testaceous stripe; ultimate tergite without lateral keels; penultimate sternite emarginate mesad in male (female unknown); male forceps long and slender, basal two-thirds arcuate, enclosing an ovoid area, beyond which inner margin with crenulate obtuse tooth. Length 26.5 mm. *burri* n.sp.

D. frontalis (Kirby, 1903).

This species is the genotype and is only known from the

Cameroons. Menozzi's identification of a female from the Belgian Congo is incorrect, the specimen proving on examination to be *D. bettoni*.

A paratype male has been examined in the Burr collection at the British Museum, labelled Cameroon (Conradt).

D. biaffra (Bormans, 1903).

Recorded from the Cameroons and once only from the Belgian Congo by Burr, who reports a single male from Ukaika-Mawambi in 1912.

D. wigginsi Burr, 1914.

D. bettoni Borelli (nec Kirby), 1923 : 414. **n.syn.**

Two males recorded by Menozzi (1935) from Ituri: Blukwa are incorrectly determined and are really *separata* Burr. No doubt the same applies to the female recorded by that author in 1928 from Kivu : Kibati, but this specimen has not been re-examined. The so-called nymph recorded by Borelli in 1923 from Haut-Uelé : Moto as *D. bettoni* proves to be an adult female of the present species.

Recorded from Uganda and Belgian Congo. A male paratype from the Burr collection has been examined. It is labelled Uganda: Entebbe Forest, vi-viii.1912 (Wiggins).

D. separata Burr, 1908.

Pygidicrana bettoni Burr (nec Kirby), 1907 : 3, pl. 1, f. 1.
D. wigginsi Menozzi (nec Burr), 1935 : 18. **n.syn.**

This species closely resembles *D. frontalis*, but is readily separated on the male genitalia. Recorded from Belgian Congo, Tanganyika, S.W. Africa and Mozambique, this species is rather widely distributed in the first-named territory, and the writer has seen material from seven different stations.

D. bettoni (Kirby, 1903).

D. frontalis Menozzi (nec Kirby), 1928 : 30. **n.syn.**

Recorded from British East Africa and Belgian Congo (Elisabethville as *D. frontalis* by Menozzi). Only females of this species have so far been studied by the writer. These include a paratype in the Burr collection, Menozzi's supposed *frontalis* from Elisabethville and another example from the same locality.

D. burri n.sp.

General colour : Antennae and head yellow, latter with dark frontal spot, infuscate sides and caudal margin. Pronotum testaceous with two broad brownish black stripes. Scutellum testaceous. Tegmina liver-brown with broad oblique testaceous stripe reaching from shoulders to three-quarters the length of tegmen. Wing-tips testaceous, marked with brown. Abdomen reddish brown, testaceous basad; ultimate tergite and forceps reddish brown. Legs and much of underside testaceous.

Antennae 27-jointed, second, fourth and fifth transverse, rest gradually lengthening. *Head* broadest at eyes, contracted behind, moderately shining; frons slightly tumid; sutures distinct; occiput flat with scattered bristles. *Pronotum* a little narrower than head, subrectangular, a little narrower caudad than cephalad, surface moderately shining; all angles rounded; cephalic margin convex; caudal margin truncate. *Tegmina* one and a half times as long as pronotum; axillary angles weak, exposing a moderately large scutellum; surface moderately shining, covered with short bristles and pubescence. *Abdomen* polished, very finely punctate. *Ultimate tergite* large, transverse, broader distad; sides straight, without lateral keels; posterior angles depressed; median portion of caudal margin advanced and raised, truncate; surface of segment finely punctured, pubescent in distal angles. *Forceps* distant at base, depressed, with short pubescence, arcuate and enclosing an ovoid area; an angular prominence present on inner margin at commencement of distal third, its periphery noticeably denticulate half way to apex, which is strongly arcuate and sharply pointed. *Penultimate sternite* transverse; upper surface flat, depressed near distal angles, shining, punctures small, with a few larger ones intermixed; distal margin truncate with deep, more or less triangular median emargination. *Genitalia* with metaparameres swollen before apex; branches of fork of inner lobe unequal, upper branch being longer than lower.

Length (total) 26.5 mm. Forceps 5.5 mm.

Type: One male, Belgian Congo, Urundi: Rumonge, 1934 (*A. Lestade*) belonging to Musée du Congo Belge, Tervueren. *Female* unknown.

The species agrees with *biaffra*, *wigginsi* and *separata* in having the male ninth sternite emarginate, and with *frontalis*, *separata* and *bettoni* in having curved, depressed and dilated male forceps. It differs from all of these in the structure of the genitalia. The structure of the apex of the virga is rather unusual but unfortunately difficult to make out in the only mount available. *D. burri* is perhaps most closely allied to *separata* and differs therefrom in the male, in the genital structure, more deeply emarginate ninth sternite, forceps, and absence of lateral keels on ultimate tergite. From *wigginsi* the present species is readily separated by the narrower pronotum and characters of tegmina and wings, forceps, penultimate sternite and genitalia.

REFERENCES.

BORELLI, A. 1923. Dermaptères du Congo Belge. *Rev. Zool. Afr.*, **11** : 412-34.

BURR, M. 1907. Dermaptera, in Sjöstedt, *Kilimandjaro-Meru Exped.*, No. **17**: 1-12, pl. i.

——————— 1912. Nachträge zu meiner Bearbeitung der Dermapteren des k. k. naturhistorischen Hofmuseums. *Ann. k. k. naturhist. Hofmus.*, **26** : 331-340.

MENOZZI, C. 1928. Dermaptères du Congo Belge. *Rev. Zool. Bot. Afr.*, **16** : 29-32.

——————— 1935. Contributo alla conoscenza dei Dermatteri del Congo Belga. *Ibid.*, **27** : 15-32.

23 Ayresome Avenue, Leeds 7.
September 17th, 1939.

Extension of Range of the Water Beetle, Hygrobia tarda Herbst. (*Col., Hygrobiidae*).—Many years ago, in a paper on the geographical distribution of insects (1917, *Ent. Mon. Mag.*, **53** : 57-61, 93-98), I discussed the case of extension of range of species, and wrote (p. 60), ' The beetle *Hygrobia tarda* Herbst. seems occasionally to come north, only to be driven back again, probably by our northern weather conditions. Thus, one specimen has been found in the Newcastle district, and in 1888 it occurred in numbers near Withernsea in East Yorkshire, although it is now extinct there.'* In the last twenty years, however, the insect has become decidedly commoner in East Yorkshire. Mr. T. Stainforth has taken it in previous years at Paull, Hedon, Kelsey Hill (commonly), and this year found a larva in Hornsea Mere, and the writer has taken it at Spurn, and this year found a specimen in Throxenby Mere, Scarborough, which is about 25 miles north in a direct line from Hornsea, the most northern record. The Hull district has been thoroughly worked for beetles for many years by the local naturalists, and Scarborough has had such excellent coleopterists as Lawson, Wilkinson, W. C. Hey (who specialised in the aquatic coleoptera) and Horrell, so that it seems fairly certain that these new localities are not the mere records of the capture of an elusive species, but do actually indicate an extension of range.

Now, during these last twenty years there has been an amelioration of climatic conditions in much at least of the north. During the last ten years the average winter temperature in Scarborough Harbour—this is only small and is filled or emptied by the sea at each tide—has been 2°F. higher than during any previous similar recorded period. In the Arctic regions, we are told that the ice barrier north of Spitzbergen is now 150 miles further north than any previous record. This is generally ascribed to some change in the Gulf Stream. Since the last war warmth-loving tunny have appeared for the first time in the North Sea, and are now comparatively common in August, while Cephalopods from warm seas, some of great size and at least one, *Architeuthis clarkei* Robson, new to science, have been commoner than ever before..

It would seem logical, then, to associate the two phenomena—the greater one of climatic amelioration and the lesser one of extension of range of an insect species—and to conclude that *Hygrobia tarda* is actually spreading northwards; and presumably, if the favourable conditions hold, it will maintain its footing or even extend its range further, or, on the other hand, under unfavourable conditions, the reverse will hold and a future generation of coleopterists will fail to find it in its present haunts.—GEO. B. WALSH, 22 Stepney Drive, Scarborough : *September 11th*, 1939.

* The Newcastle record has never been confirmed, although Mrs. Omer-Cooper (Miss Barrington) and others have worked the district thoroughly, and it is now generally discredited.

Review

'THE WORLD OF INSECTS.' By C. D. DUNCAN, Ph.D., and G. PICKWELL, Ph.D. 8vo, pp. ix+409, 194 figs., 1 col. pl. McGraw-Hill Publishing Company, Ltd. London. 1939. Price 21/-.

This well conceived popular book by the Professor of Entomology and Botany and the Professor of Zoology at San Jose State College is illustrated with numerous photographs and exceptionally good line blocks. It is divided into nineteen chapters covering most of the field with which the general naturalist might wish to seek acquaintance and includes very useful tabulations of the various insect orders and their characters (pp. 204-8) and of the materials and technique used in pest control (pp. 322-46). There is a bibliography of three pages, almost entirely devoted to works concerning the American fauna. The volume is printed on heavy paper and is strongly and attractively bound.

Rhopalum clavipes L. (Hym., Crabronidae) nidificating in old gall of Saperda populnea L. (Col., Cerambycidae).—An old gall of this beetle was found on an aspen sapling at Oxshott, Surrey, on 15th July, 1939, and as some frass was projecting from the exit hole it was split open for investigation. It was found to be packed with Psocids, except for some loose rubbish near the opening. The Psocids, though not dead, were powerless and could only kick feebly. On emptying out the contents there were found to be two *Psocus bifasciatus* Latr. with one nymph probably of the same species, and nineteen *Elipsocus hyalinus* Steph. with eleven nymphs in different stages. Attached to one of the Psocids at the upper end of the chamber was the elongate egg of the collector. All were then put back into the gall-chamber, the two halves tied together and the whole put into a glass tube. On August 6th the gall was again opened and found to contain only a loose mass of frass with Psocid wings intermixed. In the midst of this, though not attached anywhere, was the cocoon of the Crabronid. On August 20th the fly was found to be out and dead in the box, but was still supple. It had emerged by the original exit-hole of the gall, although the other side of the gall had been removed.

Messrs. Hamm and Richards (1926, The biology of the British Crabronidae, *Trans. Ent. Soc. Lond.*, **74**: 318-9) record details of only one nest of this species. I may mention that in 1934 from four cells found in a rotten birch stump on Stanmore Common, Middlesex, I bred in May two specimens of the Rhopalum and two of an Ichneumonid, since identified by Mr. J. F. Perkins as *Demopheles caliginosus* Grav., already recorded from this host as well as from *Coelocrabro ambiguus* Lep.—K. G. BLAIR, 11 Durrington Park Road, S.W.7: *August 27th*, 1939.

Killing Insects with Sulphur.—In reference to Mr. J. E. Collin's exhibit at the Entomological Club meeting in June (*antea*, p. 206), it may be pointed out that on page 108 of J. Greene's 'Insect Hunter's Companion' (3rd edition, 1880) Messrs. Bridgman and Fitch are quoted* as saying that for killing, to keep the red and yellow colours of ichneumons, sawflies and the small Hymenoptera, nothing equals the fumes of burning sulphur. I have often adopted this plan as described on p. 107 of the work, both for these insects and Diptera. The method is not so satisfactory with certain other insects, such as yellow marked Odonata and Lepidoptera.—F. H. HAINES, Linwood, Ringwood, Hants: *September 9th*, 1939.

* *Cf.* 1880, *Entomologist*, 13: 30.—EDS.

ADDITIONS TO THE LIST OF BRITISH CRANE-FLIES.

BY F. W. EDWARDS, F.R.S.

The British crane-flies of the subfamily Tipulinae were revised by Mr. H. Audcent in 1932 (*Trans. Ent. Soc. S. Engl.*, **8**: 1-35) and those of the subfamilies Cylindrotominae and Limoniinae by myself in 1938 (*Trans. Soc. Brit. Ent.*, **5**: 1-168). Since these papers were published three additional species of Tipulinae have been recorded for the British fauna, and I have become acquainted with four further British species of the subfamily and four more British Limoniinae. Notes on these eleven species are given below, and the opportunity is taken of making two necessary corrections in nomenclature and adding a few further records.

TIPULINAE.

Tipula winthemi Lack.

This species was distinguished by Lackschewitz (1932, *Konowia*, **11**: 77) from the allied *T. hortensis* Mg. chiefly by the markings of the praescutum and the structure of the male antenna and hypopygium. I took in the New Forest in August, 1936, a female *Tipula* which agrees with Lackschewitz's description of *winthemi* in having pale centres to the lateral praescutal stripes and a brown line between each of these and the median pair of stripes, and in having the femora dark at the tips only. The species is superficially very like *T. unca* Wied., but is readily distinguished from that and other British species with marmorate wings by having a complete white subapical band on the wing, reaching the hind margin in cell M_3. I believe that when this specimen was taken others of the species were on the wing but were passed over as *T. unca*. On several subsequent visits I could not find *T. winthemi*, nor could I be sure of the spot where this one was taken, but it was probably between Minstead and Wood Crates or perhaps on the east side of Mark Ash.

Tipula bistilata Lundst.

A male of this species was taken by the late J. J. F. X. King at Nethy Bridge, Inverness, 21.vi.1923; it is now in the British Museum through the kindness of Prof. E. Hindle.

T. bistilata is one of the ' marmorate ' species with four separate and uniformly dark (though not very conspicuous) praescutal stripes; by Audcent's key it would run to *T. alpium* or *vafra*, but it differs from those and other species of the *marmorata-obsoleta* group in that the pale spot in the upper basal cell lies below instead of before the radial sector; the pale areas of the wing are less developed and vein R_3 is straighter than in the species of the *marmorata* group. The appendage of the eighth sternite has a very characteristic structure: it is bare and ends in a pair of long parallel sharp points.

Tipula serrulata Lack.

This was described by Lackschewitz (1936, *Proc. R. Ent. Soc. Lond.*, B, **5**: 110) from a male taken by me in Andorra and another taken by Verrall in Wyre Forest, Worcs., 4.ix.1892, and now in Mr. Collin's collection. It is allied to *T. alpium* Bergr. and *T. obsoleta* Mg., and does not differ obviously from the former in coloration except that there is no trace of a dark mark on the pleurae; the abdomen has a sublateral black stripe as in *alpium*. From the two allied species *serrulata* differs in the detailed structure of all parts of the hypopygium; the most noticeable point of difference is perhaps in the tip of the eighth sternite, which is more broadly truncate and has more numerous small black teeth than in *obsoleta* but lacks the long hairs of *alpium*; the outer clasper also differs in shape from that of either of the other two species.

Tipula pagana Mg.

The usual form of this abundant autumn species has the wings of the female very short and useless for flight, and the legs in this sex short and stout as compared with those of the male. Many years ago the late Mr. F. Jenkinson gave me a female *Tipula* taken by himself at Crowborough, Sussex, which had wings and legs exactly as in male *pagana*. Until recently I took this specimen to be an 'abnormal' macropterous female of *pagana*, but it now seems that it may represent a distinct sub-species or possibly species. I took a similar female in the New Forest near Wood Crates on 18.x.37; on this occasion I could find no brachypterous females, though males were abundant. Two more quite similar females were taken together with two males by Mr. R. C. Bradley at Sutton

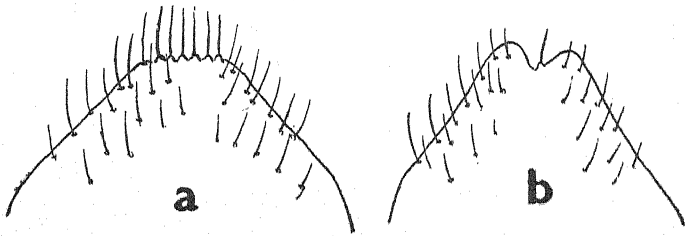


FIG. 1.—*Tipula pagana* Mg., ♂.
Tip of eighth sternite from beneath: a, typical; b, subspecies *holoptera*.

Coldfield, 30.x.1892; some of these specimens are now in the British Museum through the kindness of Mr. Payler. Four males taken at the same time and place as the New Forest female and the two males from Sutton are all alike in showing a slight difference from typical *pagana* as regards the form of the eighth sternite, though I have not as yet been able to discover any tangible differences between the two forms in other parts of the hypopygium or in other parts of the body. The distinctions are as follows:—

T. pagana s.str.: ♂ eighth sternite with the tip truncate, not or very little emarginate, and with a row of about 5-7 hairs arising from small tubercles. ♀ wings half as long as abdomen, legs stoutish.

T. pagana subsp. **holoptera** n.: ♂ eighth sternite with the tip more definitely emarginate and with only one hair arising from a tuberculate base, or none. ♀ wings longer than abdomen, legs slender.

Tipula coerulescens Lack.

This little-known species is represented in the collection of the late J. J. F. X. King by specimens from Loch Ard, 21.v.03, and Aviemore, 13.viii.03.

Tipula juncea Mg.

Mr. R. L. Coe found this striking species to be common on the Culbin Sandhills early in July, 1936. It was also taken by King at Forres and Aviemore.

Nephrotoma sullingtonensis Edw. and *N. submaculosa* Edw.

These two species were recorded as British by me in 1938 (*Encycl. Ent., Diptera,* **9**: 96-101). *N. sullingtonensis* was taken by Miss L. Frederick at Sullington, near Pulborough, Sussex, in June, 1936, and has not as yet been found elsewhere. *N. submaculosa* is common and widely distributed, but has been confused with *N. flavescens*.

Nephrotoma quadristriata Schum.

A male of this species was captured by an Asilid (*Philonicus albiceps* Mg., ♂) on Braunton Burrows, N. Devon, 13.viii.1933. The *Philonicus* was in turn captured by Mr. G. M. Spooner, who presented both captor and prey to the Oxford Museum; they are now in the British Museum through the kindness of Prof. G. D. H. Carpenter. So far as I am aware, this is the first instance of an addition to the list of British Diptera having been made by a Dipteron.

The addition of three more species of *Nephrotoma* (=*Pachyrrhina* Macq., = *Pales* Mg., 1800) to the British list prompts me to offer a fresh key for the determination of our species. All the characters noted below are applicable to both sexes.

1. Pleurae, coxae and rostrum almost all black; abdomen black with three yellow bands .... *crocata* L.

Pleurae, coxae and rostrum mainly or all yellow .... 2.

2. Sides of praescutum dull, most obviously so on a black spot which adjoins front end of the shining lateral stripe .... 3.

Praescutum uniformly shining, even on sides; usually no dark mark adjoining outer edge of lateral stripe in front (such a dark mark is present in some but not all specimens of *quadrifaria* and *aculeata*, but is shining) .... 10.

3. Abdominal tergites with transverse black bands distally, yellow basally .... *flavipalpis* Mg.

Abdominal tergites with longitudinal dark stripes, yellow sublaterally .... 4.

4. Pleurae practically all yellow; wings with conspicuous dark stigma but base of R_{4+5} clear .... *cornicina* L.

Pleurae with conspicuous black marks, including one on lower part of sternopleura .... 5.

5. A small dark cloud over basal section of R_{4+5}; stigma dark .... 6.

No cloud over base of R_{4+5}; wing-tip not darkened and postnotum not obviously pubescent .... 7.

6. A dark shade at wing-tip, very noticeable in life; postnotum practically bare as usual .... *analis* Schum.

Wing-tip not darkened; postnotum pubescent .... *guestfalica* Westh.

7. Upper half of pleurotergite black; abdomen extensively dark .... 8.

Pleurotergite all yellow; abdomen largely yellow .... 9.

8. Praescutal stripes largely fused (a feature distinguishing this species from all others of the genus in Britain except *crocata*); stigma darkish .... *sullingtonensis* Edw.

Praescutal stripes separate; stigma faint .... *maculata* Mg.

9. Praescutal black stripes with the margins dull; abdominal tergites with black lateral dots (three on second tergite) .... *flavescens* L.

Praescutal stripes uniformly shining as usual; abdominal tergites with a narrow black lateral line .... *submaculosa* Edw.

10. Pleurae all yellow; dark mark on occiput absent or indistinct (stigma variable) .... *scurra* Mg.

Pleurae with black markings, at least above base of halteres; blackish mark on occiput distinct .... 11.

11. Wings with a dark shade crossing wing on veins below stigma, tip also somewhat darkened .... *quadrifaria* Mg.

Dark shade below stigma confined to basal section of R_{4+5} .... 12.

12. Stigma faint; median praescutal stripe divided by a faint pale line; postnotum and pleurotergite apparently all yellow (in the single immature specimen examined) .... *quadristriata* Schum.

Stigma conspicuous, blackish-brown; median praescutal stripe without trace of paler line; postnotum dark distally .... 13.

13. Pleurotergite all yellow, or the upper half only faintly darkened ... *dorsalis* F.

Pleurotergite with the upper half largely or entirely dark brownish .... 14.

14. A brown spot below anterior end of each lateral praescutal stripe (sometimes larger and joined to the stripe, more often separate and sometimes very small and faint); paratergite (the narrow strip on margin of praescutum) mainly yellow .... *aculeata* Lw.

No dark spot below anterior end of lateral praescutal stripe, but paratergite all black .... *lunulicornis* Schum.

Prionocera proxima Lack.

A single male of this species was taken by the late J. J. F. X. King at Catfield, Norfolk, 9.viii.1920, in company with many of the common *P. turcica*. It is now in the British Museum, presented by Prof. E. Hindle.

Prionocera pubescens Lw.

This was recorded by Audcent under the name *subserricornis* Zett.; however, Loew's name is earlier than Zetterstedt's, and should be used, as there appears no doubt from his original description that this was the species he described. Mr. C. A. Cheetham has recorded *P. pubescens* as occurring commonly with *P. turcica* on Austwick Moss, N.W. Yorks, in June, 1938.

The three British species, together with three others which may quite possibly be found to occur with us, are described and figured in Lackschewitz's revision of the Palaearctic species of this genus (1933, *Konowia*, **12**: 129-143).

LIMONIINAE.

Limonia (*Geranomyia*) *bezzii* Alex. & Leonard.

In 'British Short-Palped Crane-flies' I recorded as possibly *L. bezzii* a single female *Geranomyia* taken by Dr. F. H. Haines on Chesil Beach, Portland, 4.vi.1891. In June, 1937, I visited Portland in the hope of re-discovering the species, but found only *G. unicolor* on the rocky shore. However, in August, 1939, I was again in Dorset, and on the suggestion of Dr. C. D. Day searched the salt-marsh vegetation on the inner side of the Chesil Bank near the mouth of the Fleet. Here I was more fortunate, and in the course of a hurried visit at sunset on August 31st took 6 ♂♂, 2 ♀♀ of *L.* (*G.*) *bezzii*, this being the only Tipulid species occurring in the area. The habitat is quite different from that of *unicolor*; all the specimens were taken at about high-water mark where the shingle of the bank met the mud of the Fleet.

Comparison with a male of *bezzii* in the British Museum from Algeria shows that our species is undoubtedly the same as the Mediterranean form, the only obvious difference being that the tips of the femora are more definitely darkened in British specimens. Apart from being a good deal smaller, *bezzii* differs conspicuously from *unicolor* in thoracic markings. The praescutum is mainly yellowish, with three or four brown stripes (the median stripe being definitely divided into two in some specimens but not in others), and in addition with an elongate blackish mark on the side margin. The pleurae are mainly yellowish, with a sharply-defined blackish spot midway between the front coxa and the blackish mark on the praescutal margin, and with a less obvious brownish stripe from front coxa to base of haltere. The proboscis of *bezzii* has a dark ring close to the tip which is absent in *unicolor*.

Limonia (*Atypophthalmus*) *inusta* Mg.

I suggested in my recent revision of the short-palped crane-flies that this species would probably be found to occur in Britain. After attending the Congress of the Society for British Entomology at Manchester in July last I visited the small nature reserve of Cotterill Clough, Cheshire, and there took a single male of *L. inusta*.

Dicranota (*Paradicranota*) *robusta* Lundst.

This is a very interesting and little-known species hitherto only reported from Finland and Latvia. Though in most respects conforming with the diagnosis given by me of the subgenus *Paradicranota,* it differs from the other included species as well as from most or all other species of other subgenera of *Dicranota* in the reduction of the antennae, which are not only unusually short but have the number of segments in the flagellum reduced to eight or nine; this was overlooked by Lundström in his original description. The mesonotum is less arched than in other species, the body rather stouter and the wings and legs rather shorter, indicating that the insect flies little if at all. The wings are also distinctive in having vein *Cu* conspicuously dark; cell M_1 is constantly absent as in *D. pavida*.

Mr. H. Britten took very numerous specimens under stones (shingle) at the edge of the river Goyt above Taxal, Derbyshire, 23.iv. and 14.v.39, and presented a couple of dozen to the British Museum.

Limnophila filata Walk.

If a subgeneric term is considered desirable for the species of this group the name *Neolimnomyia* Séguy is available. It was proposed (1937, *Bull. Mens. Ass. Nat. Loing*, **13**: 6) for *N. sylvestris* Séguy, a species which is evidently very similar to *L. filata* but has the tips of the male parameres brush-like instead of simple; the figure also shows cross-vein *r* and cell M_1 to be absent, but these may be individual peculiarities. It is possible that *sylvestris* may occur in Britain as well as *filata*.

Oxydiscus dalei sp.n.

A small species resembling *O. ecalcaratus* Edw. in the entire absence of tarsal spurs and in the presence of a pair of sharp-pointed processes extending laterally about the middle of the ventral fork of the male hypopygium. Differs from *ecalcaratus* as follows:—

Thorax paler, scutum mainly pale, praescutum with traces of four slightly darker stripes, more obvious in life (in *ecalcaratus* the scutum is mainly dark and the praescutum is uniformly dark without any trace of darker stripes from any angle of view); upper dark stripe of pleurae distinct but narrower than in the other species; spot on lower sternopleura fairly distinct. Wings with the hairs almost confined to the part beyond discal cell, none in discal or basal cells or in bases of cells R_2, R_3, or R_5 (in *ecalcaratus* the hairs of the wing-membrane extend back to level of cord; they are fairly numerous in discal cell and some occur at tip of upper basal cell). R_2 shorter than in *ecalcaratus*, less than twice as long as R_{2+3}. Cell M_1 extremely short, in one specimen absent on both wings (in *ecalcaratus* it is not quite so short). Hypopygium differing from that of *ecalcaratus* chiefly in the length of the penis, which is almost twice as long as the ventral fork and bent instead of straight. Wing-length 4—6 mm.

DORSET: Glanvilles Wootton, 22.viii.39 (*F.W.E.*). Type ♂, paratypes 4 ♂♂, 4 ♀♀, in British Museum. DEVON: Brendon, 1 ♂ (previously recorded as *O. ecalcaratus*). Tibial spurs absent in all.

The locality at Glanvilles Wootton is a very boggy corner of a wood, heavily shaded by alder and ash, known locally as 'Mullett's Copse.'

Gonomyia (Idiocera) bradleyi sp.n.

A species allied to *G. jucunda* Lw. and *G. punctata* Edw.

Thorax as in the allied species mainly greyish, with two darker stripes running the whole length of praescutum and scutum; scutellum mainly greyish, without darker median line but with posterior margin pale; pleurae with yellowish stripe below middle. Wings with stigma rectangular, filling end of marginal cell, its proximal part somewhat darker than the remainder (in *punctata* the stigma is uniformly coloured and much darker). Very small dark clouds on base of *Rs*, tip of R_1, base of cell M_1 and cross-vein *m-cu*, but none at arculus (in *punctata* these clouds are larger and darker, especially those on *Rs* and R_1, and there is a small cloud at arculus). Venation: *Sc* rather shorter than in *punctata*, ending before one-third of the length of *Rs*; R_2 nearly transverse, ending in R_1 just before its tip (possibly an abnormality of the type); R_3 strongly but evenly curved (in *punctata* it is bent upwards almost at right angles at the tip); *Rs* angled near base, but more obtusely than in *punctata*. Hypopygium with several peculiarities, notably the pair of divaricate black spines at tip of aedeagus; intermediate style simple, not forked as in *punctata*. Wing-length 6 mm.

WORCS.: Wyre Forest, vii.1889 (*R. C. Bradley*); type ♂, presented to British Museum by Mr. Payler, Curator of Natural History Department of Birmingham Museum. The specimen is one of the two on which Mr. Bradley based his provisional record of the occurrence of *G. jucunda* Lw. in Britain. Bradley's second specimen, now also in the British Museum through the kindness of Mr. Payler, is not this species but *G. punctata* Edw. It was a remarkable coincidence that Mr. Bradley should have obtained at the same place on the same day one male and one female representing two different (and at that time undescribed) species of the *jucunda* group, when no specimen of this group had previously been found in Britain.

G. bradleyi, though evidently allied to *G. jucunda* Lw., can hardly be the same species because it lacks both the adventitious cross-vein and the hairs on the membrane at the tip of the wing, the two characters chiefly emphasised by Loew in his original description. Moreover, in *G. jucunda* as figured by Kuntze (1914) and Pierre (1924), as well as in *G. pseudojucunda* Pierre, R_2 ends almost its own length beyond the tip of R_1 instead of close to this point. Another Palaearctic species of the same group is *G. schrenki* Mik of Turkestan; this, according to Kuntze's description and figure, has no cloud at tip of R_1 and vein *Sc* much longer, ending above tip of *Rs*.

I give herewith for comparison figures of the hypopygia of three of the four British species of this subgenus; of the fourth species, provisionally but perhaps incorrectly determined as *G. connexa* Lw., I have seen no males.

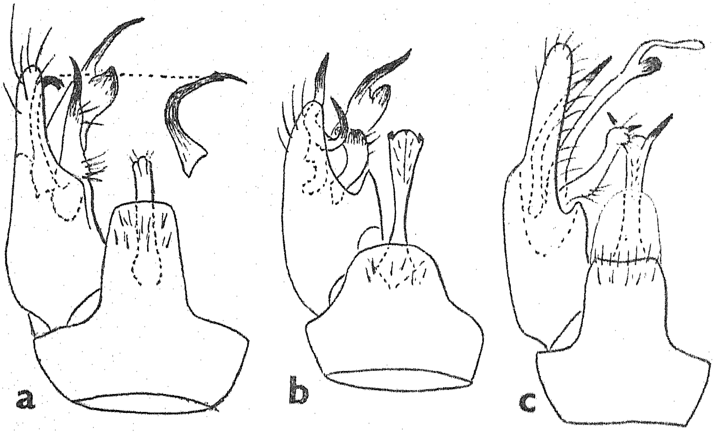


Fig. 2.—British *Gonomyia* (*Idiocera*).
Hypopygium from above: a, *sexguttata*; b, *punctata*; c, *bradleyi*.

Cheilotrichia Rossi.

In discussing this genus (*Trans. Soc. Brit. Ent.*, **5**: 117) I omitted to refer to the generic name *Platytoma* Lioy. This was proposed for *cinerascens* Mg., which I have now shown to be the same as *nubila* Schum., a typical member of the subgenus *Empeda*. The subgeneric name *Empeda* O.-S., 1869, must therefore give place to *Platytoma* Lioy, 1863.

CORRIGENDA.

The following corrections should be noted to my paper in *Trans. Soc. Brit. Ent.*, Vol. 5:—

Page 8. Last line of first par.: For Fig. 20 read Fig. 23.
,, 19. Fourth par.: Insert p. 152 in bracket.
,, 45. Last line but one: For ♀ read ♂.
,, 63. Couplet 8 in key. The words 'wings unspotted' should be transferred to second half of couplet 9.
,, 86. Under *L. sepium*. For 'pale above, dark beneath,' read 'dark above, pale beneath.'
,, 130. *E. pusilla*. For Text-fig. 20 read Text-fig. 23.

British Museum (Nat. Hist.),
Cromwell Road, S.W.7.
September 20th, 1939.

Balaninus villosus F. (Col., Curculionidae) bred from a gall of Rhodites rosae L. (Hym., Cynipidae).—From a last season's gall of the rose bedeguar found near Frome, Somerset, in April, the usual assemblage of gall-maker, parasites and inquilines commenced to emerge at the beginning of June. Among them were four or five fair-sized weevil larvae. Of these one was preserved and the rest allowed to go down into earth, and on 25th September an adult *Balaninus* was found to be out. The gall was found by my children, and they cannot now remember the precise circumstances or whether there were any oaks or hazels overhanging the rose bush. That so many larvae should be in the same gall, and that they should have remained there so long before appearing, seem to indicate that they must have fed there and not merely hibernated there after leaving a possible host acorn the previous autumn. The gall was kept in a tin by itself, as were the larvae in earth, so that the possibility of their having been accidentally introduced must be ruled out.—K. G. BLAIR, 11 Durrington Park Road, Wimbledon, S.W.20: *October 8th*, 1939.

Stenopelmus rufinasus Gyll. (Col., Curculionidae).—Though this beetle is by now probably widely spread in Southern England, a record of its occurrence in Somerset, near Bridgwater, in August of this year may be of interest on account of the numbers of the beetles present. *Stenopelmus* was discovered in a pond completely hidden by *Azolla*, the plant covering the surface with a layer from four to six inches thick. A small handful produced seventeen adult beetles and many larvae, while a rough calculation based on the size of the pond and the number of beetles taken from various parts showed that the population of adult beetles was at least half a million.

Possibly figures should be given. The pond, fifteen yards across and approximately circular, has an area of roughly one hundred and fifty square yards. Taking twelve handfuls to the yard linear gives a little over twenty thousand handfuls on the surface. The experimental samples taken round the edge produced seventeen, fourteen, twenty-seven and twenty beetles, and allowing for specimens missed—for *Stenopelmus* is easy to overlook—an average of twenty was assumed. The central part of the pond was tested by pulling out a small tuft with a long stick; this produced five beetles. As only the top layer of the *Azolla* was dealt with, it is possible that the numbers estimated may be too low.—G. H. ASHE, Hartlebury, Kidderminster: *September 29th*, 1939.

A note on Scymnus minimus Rossi (Col., Coccinellidae).—I have not found this beetle by any means a common species in this district, two specimens only having been taken in twenty years' collecting; it was therefore pleasant to find it in considerable numbers on Hartlebury Common during the last week. The *Scymnus,* in all its stages, was plentiful in webs spun by a red mite on Gorse branches, and though no beetle was seen attacking the mites, it seems most likely that these are its prey. While examining the underside of the beetle under the microscope, I touched one of the legs, and immediately a large yellow globule of liquid—as big as the insect's head—was given out from the junction of femora and tibia, and the other legs in turn also produced their drops on being touched. The liquid hardened in a very short time, and rendered setting a difficult operation. No solvent for it could be found, though ether made it slightly less adhesive.—G. H. Ashe, Hartlebury, Kidderminster: *September 27th,* 1939.

Migratory Lepidoptera in the Oxford District.—Recent work on the migration of Lepidoptera has shown fairly conclusively that these insects, like birds, follow fairly definite lines of flight in the course of their migration, though the reasons which determine these lines are still very little understood. It therefore seems worth while to summarise what is known of the occurrence of migratory Lepidoptera in particular areas, where the information is readily available. I have been recently engaged on the compilation of a list of the Lepidoptera of the Oxford District (within ten miles of the centre of the City), and I have therefore extracted from the information collected the following notes on migratory species.

It may be said at once that the list of such species which have been recorded near Oxford is a short one, and its character suggests that the district is not on a regular migration route for more than a few species, and these the commoner ones. This might be easily explained on geographical grounds. Oxford is some sixty-five miles from the nearest point of the south coast at Portsmouth, and about eighty miles from the mouth of the Thames at Southend. In both directions, moreover, there are natural obstacles to the easy arrival of insects from the coast. On the south there is a wide expanse of exposed downland in North Hampshire, Berkshire and Wiltshire, in which the valleys all run east and west rather than north and south. From the east, the Thames Valley at first sight appears to provide a natural line of approach, but serious obstacles are provided by the built-up area of London and by the narrow and devious course of the Thames Valley between the high land of the Chilterns and the Berkshire Downs. Access from the west is also made difficult by the bare expanse of the Cotswolds. The shortness of the list of Oxford migrants does appear to give some support to the idea that the migration lines of Lepidoptera are largely determined by the configuration of the country.

Danaus plexippus L.—Three records: 1908, North Oxford, in a greenhouse; autumn, 1910, North Oxford, a male in fine condition taken on michaelmas daisies (this specimen is now in the University Museum); September, 1926, Headington Hill, one observed on several successive days on michaelmas daisies. *Vanessa atalanta* L.—Occurs practically every year, but is seldom abundant. Odd specimens are occasionally seen in June; my impression is that the autumn insects are mostly local bred and are not often reinforced by immigrants. *V. cardui* L.—Much less regular than *atalanta,* but in some years (as in 1939) perhaps rather commoner. But, again, my impression is that few of the autumn specimens come from a distance. *Aglais urticae* L.—General in the district, always common, occasionally abundant. *Nymphalis antiopa* L.—Only one recent record: North Oxford, one on buddleia in a garden, September 1st, 1931. *N. io* L.—General, always common. *Pieris brassicae* L.—Certainly very variable in numbers, especially in the second generation; but I have never observed any clearly migratory flights, and I am inclined to think that variations in its abundance are due more to local weather conditions than to migration. *P. rapae* L.—Always much commoner than *brassicae*; otherwise the same remarks can be applied to it. *P. napi* L.—Always common; I have never seen any suggestion of migration. *Colias hyale* L.—Occurrence is very unusual. Seen in some numbers in 1900 and 1901 in two widely separated places; perhaps twenty specimens were taken. Since then, only one female, at Weston-on-the-Green, September 16th, 1911. *C. croceus* Fourc.—Not at all regular, and seldom really common. 1892; 1900, fairly common; 1920, common; 1936, two; 1938, fairly plentiful. All the records I have seen are for August, September or October. *Acherontia atropos* L.—Very erratic in appearance, but very occasionally quite numerous as larva. Of fifteen locally taken or bred adults in the University Museum, all except one (May 10th, 1905) were recorded in September to December. In recent years I have records for 1930 (2), 1933, 1934, 1939. *Herse convolvuli* L.—Very uncertain; no records of larva. All but one (June 14th, 1907) of the adults I have seen occurred in August or September. In recent years, 1922 (numerous), 1933 (2), 1934 (1). *Sphinx ligustri* L.—In many years apparently absent, but sometimes quite common both as larva and adult. There is a strong suggestion that it is not truly indigenous in the district, but is recruited periodically by immigration. Was fairly common in 1934 and 1936; I have seen no record for 1935. *Phryxus livornica* Esp.—Two records only: Abingdon (Berks), 15.vii.1883; South Oxford, one in a garden, 13.v.1922. *Hippotion celerio* L.—Only two certain records: West Hanney (Berks), one in a greenhouse, 1.x.1884; Oxford, one found on a motor-car after a night journey from Nuneaton to Oxford, 18-19.x. 1931. *Macroglossa stellatarum* L.—Occurs almost every year, but only in small numbers. Specimens are occasionally seen as early as the first week of May. There is one record of the larva. *Agrotis upsilon* Rott.—Always present, but the wide variations in numbers which can be observed from day to day, especially at ivy blossom, are suggestive of migration movements. *A. saucia* Hübn.—Always scarcer than *upsilon*, but also very variable in numbers. Sometimes apparently absent; occasionally common, as in 1938. Var. *margaritosa* Haw. is certainly commoner than the type, but appears to be more irregular. *Leucania vitellina* Hübn.—One record only: Boars Hill (Berks), at sugar, 4.x.1900. *Heliothis peltigera* Schiff.—One record only: Bagley Wood (Berks), one at rhododendron, 4.vi.1938. *Plusia gamma* L.—Always common, and abundant at some period in almost every year. Noticeably migratory in behaviour. In each of the last five years I have observed swarms arriving in my garden in late May or June, and frequenting flowers of *Centranthus ruber* D.C. and other plants. They appear suddenly in great numbers, remain numerous for two or three days, and then become scarce or totally disappear. But no such concentrations have been noticed in the appearance of the August and September insects, which appear in smaller numbers over a prolonged period. *Cidaria obstipata* F.—Two records only: Abingdon (Berks), one; North Oxford, one, August 1st, 1922. *Phlyctaenia ferrugalis* Hübn.—Common in some years, absent in others. In 1938 a few were obtained at light in late June and early July; in October the insect was fairly common at ivy blossom. *Nomophila noctuella* Schiff.—Usually absent, seldom seen in large numbers. *Loxostege palealis* L.—One record only: Cumnor Hill (Berks), August 8th, 1935, at light.—R. F. Bretherton, M.A., 'Merifield,' Cumnor Hill, Oxford: *September 25th*, 1939.

Immigrant Lepidoptera in the Inner and Outer Hebrides during 1939.—Once again the preparation of our flora of the Inner and Outer Hebrides has necessitated further journeys to the Islands, and, as usual, advantage has been taken of the fact to study the Lepidoptera. Our work commenced on Tiree on May 30th, when *Plusia gamma* L. was noted near Balephetrish Hill. Next day *Vanessa cardui* L. put in an appearance near Baugh. June 1st saw us on Coll, and there *Plusia gamma* abounded from Crossapol in the south-west to Sorisdale in the north-east. We did not then observe *Vanessa cardui* on Coll, but some of our students reported it as not uncommon on that island and on the Isle of Gunna in the last week of August. *Pieris brassicae* L., which may or may not have been immigrants, turned up at Clabhach, Coll, on June 2nd.

On July 19th we arrived on the Isle of Barra, where at that date *Pieris brassicae* occurred freely. These insects, no doubt, formed part of an immigrant horde which extended as far north as Little Bernera and Great Bernera, off the west coast of Lewis, and to the Isles of Pabbay and Berneray in the Sound of Harris. Certain members of our advance party captured a series of specimens, all of which were females, at all of these points.

On July 22nd we proceeded to the Isle of Vatersay, where the only immigrant forms seen were larvae of *Vanessa atalanta* L. on *Urtica*, and of *Plusia gamma* on cabbage. Two days later, on the Isle of Sandray, larvae of *Vanessa cardui* were collected on thistles.

Returning to Barra on August 1st, we found *Pieris brassicae* still abundant, and, what appears to be significant, half-grown larvae of the same species at Castlebay. In all probability the latter represented either a genuine native stock or, granting that the specimens seen on Coll on June 2nd were immigrants, descendants of the same swarm.

On August 9th we set out for South Uist, and after a terrible journey, both by land and sea, reached our headquarters at Stoneybridge. There the only species important in the present connection were pupae of *Plusia gamma* on nettle near Ormaclett, and larvae and pupae of *Plutella cruciferarum* Zell. on cabbage in a crofter's garden near Stoneybridge.—J. W. HESLOP HARRISON, King's College, Newcastle-upon-Tyne: *October 11th*, 1939.

Bombus hortorum L. (Hym.) at Sycamore Flowers on the Isle of Coll.—On May 28th, an extremely hot day, the sycamores on the so-called 'treeless' isle were in full flower, and I was attracted by the extraordinary hum of humble bees which proceeded from them. Naturally I expected to find the authors of the music to be queens of *Bombus smithianus* White, and was greatly surprised to discover that not a single representative of that species was present. Every specimen—and I counted over 80 queens on one tree—belonged to the species *Bombus hortorum*. This was truly remarkable when one remembers that, near Arinagour, *Bombus smithianus* outnumbers that species and a little to the south-west *Bombus ruderarius* Müll. exceeds both in numbers. It should, however, be emphasised that on both Tiree and Coll *Bombus smithianus* is by far the commonest and most widely distributed bee.—J. W. HESLOP HARRISON, King's College, Newcastle-upon-Tyne: *October 11th*, 1939.

Chrysis ignita L. (Hym.) at the Flowers of Tormentil.—It is only rarely that one sees this insect at flowers at all and almost equally strange to observe Tormentil visited by Hymenoptera. Nevertheless, a single specimen of this Chrysid was captured at the flowers of *Tormentilla erecta* L. near Crossapol, on Coll.—J. W. HESLOP HARRISON, King's College, Newcastle-upon-Tyne: *October 11th*, 1939.

Depressaria nervosa Haw. and D. heracleana De Geer (Lep., Oecophoridae) in the Hebrides.—Last year I reported the former species from the Isle of South Uist, where the food plant *Oenanthe crocata* L. is rare and local. On Barra, where the plant is even rarer, the insect failed entirely. On the other hand, although the food plant is equally uncommon on Coll, a colony just south of Arinagour, on Caolas an Eilean, produced *Depressaria nervosa* in great quantities. The food plant of *Depressaria heracleana, Heracleum Sphondylium* L., generally speaking, appears to be rare in most of the Hebrides. However, on the Isle of Barra the plant, especially near Castlebay, becomes quite a familiar object, and there larvae of *D. heracleana* were common enough on the umbels in the first week of August.—J. W. HESLOP HARRISON, King's College, Newcastle-upon-Tyne: *October 11th*, 1939.

NOTES ON IRISH SIPHONAPTERA.—I.

BY EUGENE O'MAHONY.

The following notes contain data regarding three additions to the 'Preliminary list of Irish Fleas' (*cf.* O'Mahony, 1939, *Ent. Mon. Mag.*, **75**: 124-6), local species, a new host and the results of some breeding experiments carried out with bird fleas.

Ctenocephalides canis Curtis.—Sutton, Co. Dublin, Miss M. McInnally, vii.1939, a number from dog. Dundrum, Co. Dublin, A. E. Williams, 22.ix.1939, one from fox, *Vulpes v. crucigera* Bech.

Ceratophyllus farreni Roths.—Malahide, Co. Dublin, R. McAllister and E.O'M., 18.viii.1939, from nest of house-martin, *Delichon u. urbica* (L.).

Ceratophyllus hirundinis Curtis.—In company with the above; *farreni* was the dominant species in this nest and the females were much in excess of the males; *hirundinis* was represented by five specimens, two of which were females.

The above three species are additions to the list. The following is the first record from this host, and the next the second Irish record.

Spilopsyllus cuniculi Dale.—Tibradden, Co. Dublin, Mr. Liam Tannam brought me a male and female from Irish Hare, *Lepus hibernicus* Bell.

Paraceras melis (Walker).—Tullamore, Offaly (=King's Co.), A. E. Williams, viii.1939, a number from badger, *Meles m. meles* L.

The following species were bred:—

Ceratophyllus styx Roths.—Skerries, Co. Dublin, E.O'M., 7.vii.1939, in numbers from nest of sand martin, *Riparia r. riparia* L.

Ceratophyllus vagabunda insularis Roths.—Near the Casana rock, Howth, Co. Dublin, E.O'M., 2.iv.1939, one female from nest of herring gull, *Larus a. argentatus* Pont.; Cliffs, Broad Bay, Lambay (an island off the Dublin coast), E.O'M., 30.vii.1939; two females from nest of the same host. This flea is apparently uncommon, as I examined a number of nests at the latter locality without finding any larvae. This species has only been recorded as Irish once before.

Ceratophyllus gallinae Schr. and *Dasypsyllus gallinulae* (Dale) were bred in considerable numbers from a variety of nests, and the latter is the commoner of the two in point of numbers. The following tabular arrangement will show the hosts parasitised. An × indicates the parasite. The nests were all obtained in north Co. Dublin.

	PARASITE.	
HOST.	*D. gallinulae.*	*C. gallinae.*
Starling (*Sturnus v. vulgaris* L.)	×	×
Greenfinch (*Chloris c. chloris* (L.))	×	—
House sparrow (*Passer d. domesticus* (L.))	—	×
Chaffinch (*Fringilla c. gengleri* Klein.)	×	—
Blue tit (*Parus c. obscurus* Praz.)	—	×
Mistle thrush (*Turdus v. viscivorus* L.)	×	×
Song thrush (*T. e. ericetorum* Turt.)	×	×
Blackbird (*T. m. merula* L.)	×	×
Hedge sparrow (*Prunella m. occidentalis* (Hart.))	—	×
Wren (*Troglodytes t. troglodytes* L.)	×	×

National Museum of Ireland,
Kildare Street, Dublin.
September 29th, 1939.

STIPHROLAMYRA COMANS SP.N., A NEW AFRICAN ASILID (DIPTERA).

BY B. M. HOBBY, M.A., D.PHIL., F.R.E.S.

Stiphrolamyra comans sp.n.

Allied to *Lamyra rubra* Bromley (1935, *Rev. Zool. Bot. Afr.*, **26** (4): 413) from the Belgian Congo. Distinguished by the black palpi and proboscis, shorter third antennal segment, black prothorax, large median cruciform black vitta on the mesonotum and the deep velvet-black pleura.

Head chiefly reddish-brown; frons with a transverse black band including ocellar tubercle and touching the compound eyes; face more yellowish; lateralia dark, or partly black; occiput black. Frons with yellow bristles and hairs, mystax and beard white, occiput with silvery pruinescence, occipital bristles and hairs yellow. Antennae reddish-brown with yellow bristles and hairs; third segment nearly three times as long as the first two together. Proboscis reddish-brown basi-ventrally, black dorsally and distally; proximal hairs white, distal hairs yellow; palpi dark reddish-brown with concolorous bristles above and distally and white bristles ventrally. *Thorax.* Pronotum reddish-brown with three yellowish-dusted, black spots; at the extreme sides with a narrow, compact brush of long, thick white hairs continuous with a similar brush on the sternopleuron. Prothoracic pleuron reddish-brown with numerous shorter and thinner white hairs. Mesonotum reddish-brown with central and side stripes shining black; humeral calli with shining black spots; clothed with conspicuous short white hairs; bristles yellow. Notopleural stripe velvet-black. Pleura reddish-brown except for a large black spot extending over lower part of mesopleuron and adjacent parts of sterno- and pteropleura. Mesopleuron with short white hairs and silvery pruinescence on upper two-thirds; elsewhere pruinescence yellowish-brown. Scutellum reddish-brown with minute concolorous hairs. Metaphragma and metapleural bristles reddish-brown. *Legs* reddish-brown; coxae black in front; trochanters, femora and tarsi darker than tibiae; claws black in distal half; hairs and bristles chiefly white, some yellow bristles on femora and tarsi. *Wings* uniformly infuscate except fore and hind margins of discal cell and proximal cells adjoining. *Abdomen* reddish-brown; tergites with subtriangular black markings at sides; bristles and pubescence yellow; pruinescence apparently silvery (not well preserved in specimens examined).

Length of body 16 mm., of wing 11 mm.

HOLOTYPE: ♀, British East Africa, Makindu, 3,300 ft., 5-7.iv. 1911 (*S. A. Neave*, British Museum (Nat. Hist.)).

PARATYPE: ♀, Uganda, Entebbe (*H. Rolle*, coll. Oldenberg, Deutsches Entomologisches Institut).

Hope Department of Zoology (Entomology),
Oxford University Museum.
September 19th, 1939.

Notes on Rhingia rostrata L. (Dipt., Syrphidae).—I was much interested in Mr. R. L. Coe's account of this species (*antea*, pp. 225-7). Actually I myself took a single male of the species on June 3rd, 1903, at Tan-y-Bwlch, N. Wales, which is not far from Bradley's original locality at Barmouth. This, I suppose, ought to have been recorded long ago, but I have hitherto felt doubt about the distinction between our two species of *Rhingia*, a doubt which may now be regarded as being resolved by Mr. Coe's discovery of differences in the genitalia. Besides my one British specimen I have four other males taken by me on Lago Lugano, and four males and three females in the Girschner collection from Germany. *R. rostrata* can be fairly easily recognised by the much yellower coloration both of abdomen and legs, but I think that the character to which Mr. Coe calls attention of the yellow side margins of the abdomen compared with the black edges of *campestris* Mg. should prove a very useful and conclusive one. I find that there is variation in the colour of the marginal hairs, as one of my *campestris* has a considerable patch of black ones at the hind corner of the second tergite, and one of the *rostrata* has practically none, only a few odd inconspicuous ones at the same place. On the other hand, the pubescence of the thorax seems to provide another character so far as I can judge from my specimens, as all the hairs are black in *rostrata*, but in *campestris* are mixed black and yellow.—COLBRAN J. WAINWRIGHT, 172 Hamstead Road, Birmingham: *October 9th*, 1939.

Coleoptera in Dumfriesshire.—The following species of Coleoptera were taken by me last year (1938) in South-Eastern Dumfriesshire, and are additional to my previous notes. *Amara consularis* Dufts. occurred in my garden in autumn. It is rare in the county. *Agabus sturmi* Gyll., uncommon in slowly running water. *Gyrinus substriatus* Steph., locally plentiful on pools. *Microglotta pulla* Gyll., odd specimens swept. *Atheta diversa* Shp., one in moss in April. *Datomicra arenicola* Thoms., one from a dead rook in May. *Falagria sulcata* Payk., one under a stone in April, apparently scarce here. *Leptusa fumida* Erichs., in stumps of Scots fir, not common. *Tachinus subterraneus* Lin., not uncommon in fungi, carrion, etc. *Bolitobius trinotatus* Erichs., common in fungi in autumn. *Creophilus maxillosus* Lin., one in a dead hare. I have only met with this species here once previously when a farmer gave me one found on a dead lamb. *Staphylinus olens* Müll., scarce, one in my garden and several seen in hedge cuttings. *Philonthus aeneus* Rossi, sometimes common in carrion and in moss. *P. concinnus* Grav., rare, one swept on Nutberry Moss and another from flood refuse from the River Kirtle. *Gabrius vernalis* Grav., in flood refuse from the Solway shore. *Xantholinus longiventris* Heer, also in flood refuse in spring. *Calyptomerus dubius* Mshm., in cut reeds on Raeburn Flow. *Sciodrepa fumatus* Spen., several from a dead hare on Newton Moss in May. *Neuraphes angulatus*

	PARASITE.		
HOST.	*D. gallinulae.*		*C. gallinae.*
Starling (*Sturnus v. vulgaris* L.)	×	...	×
Greenfinch (*Chloris c. chloris* (L.))	×	...	—
House sparrow (*Passer d. domesticus* (L.))	—	...	×
Chaffinch (*Fringilla c. gengleri* Klein.)	×	...	—
Blue tit (*Parus c. obscurus* Praz.)	—	...	×
Mistle thrush (*Turdus v. viscivorus* L.)	×	...	×
Song thrush (*T. e. ericetorum* Turt.)	×	...	×
Blackbird (*T. m. merula* L.)	×	...	×
Hedge sparrow (*Prunella m. occidentalis* (Hart.))	—	...	×
Wren (*Troglodytes t. troglodytes* L.)	×	...	×

National Museum of Ireland,
Kildare Street, Dublin.
September 29th, 1939.

STIPHROLAMYRA COMANS SP.N., A NEW AFRICAN ASILID (DIPTERA).

BY B. M. HOBBY, M.A., D.PHIL., F.R.E.S.

Stiphrolamyra comans sp.n.

Allied to *Lamyra rubra* Bromley (1935, *Rev. Zool. Bot. Afr.*, **26** (4): 413) from the Belgian Congo. Distinguished by the black palpi and proboscis, shorter third antennal segment, black prothorax, large median cruciform black vitta on the mesonotum and the deep velvet-black pleura.

Head chiefly reddish-brown; frons with a transverse black band including ocellar tubercle and touching the compound eyes; face more yellowish; lateralia dark, or partly black; occiput black. Frons with yellow bristles and hairs, mystax and beard white, occiput with silvery pruinescence, occipital bristles and hairs yellow. Antennae reddish-brown with yellow bristles and hairs; third segment nearly three times as long as the first two together. Proboscis reddish-brown basi-ventrally, black dorsally and distally; proximal hairs white, distal hairs yellow; palpi dark reddish-brown with concolorous bristles above and distally and white bristles ventrally. *Thorax.* Pronotum reddish-brown with three yellowish-dusted, black spots; at the extreme sides with a narrow, compact brush of long, thick white hairs continuous with a similar brush on the sternopleuron. Prothoracic pleuron reddish-brown with numerous shorter and thinner white hairs. Mesonotum reddish-brown with central and side stripes shining black; humeral calli with shining black spots; clothed with conspicuous short white hairs; bristles yellow. Notopleural stripe velvet-black. Pleura reddish-brown except for a large black spot extending over lower part of mesopleuron and adjacent parts of sterno- and pteropleura. Mesopleuron with short white hairs and silvery pruinescence on upper two-thirds; elsewhere pruinescence yellowish-brown. Scutellum reddish-brown with minute concolorous hairs. Metaphragma and metapleural bristles reddish-brown. *Legs* reddish-brown; coxae black in front; trochanters, femora and tarsi darker than tibiae; claws black in distal half; hairs and bristles chiefly white, some yellow bristles on femora and tarsi. *Wings* uniformly infuscate except fore and hind margins of discal cell and proximal cells adjoining. *Abdomen* reddish-brown; tergites with subtriangular black markings at sides; bristles and pubescence yellow; pruinescence apparently silvery (not well preserved in specimens examined).

Length of body 16 mm., of wing 11 mm.

HOLOTYPE: ♀, British East Africa, Makindu, 3,300 ft., 5-7.iv. 1911 (*S. A. Neave*, British Museum (Nat. Hist.)).

PARATYPE: ♀, Uganda, Entebbe (*H. Rolle*, coll. Oldenberg, Deutsches Entomologisches Institut).

Hope Department of Zoology (Entomology),
Oxford University Museum.
September 19th, 1939.

Notes on Rhingia rostrata L. (Dipt., Syrphidae).—I was much interested in Mr. R. L. Coe's account of this species (*antea*, pp. 225-7). Actually I myself took a single male of the species on June 3rd, 1903, at Tan-y-Bwlch, N. Wales, which is not far from Bradley's original locality at Barmouth. This, I suppose, ought to have been recorded long ago, but I have hitherto felt doubt about the distinction between our two species of *Rhingia*, a doubt which may now be regarded as being resolved by Mr. Coe's discovery of differences in the genitalia. Besides my one British specimen I have four other males taken by me on Lago Lugano, and four males and three females in the Girschner collection from Germany. *R. rostrata* can be fairly easily recognised by the much yellower coloration both of abdomen and legs, but I think that the character to which Mr. Coe calls attention of the yellow side margins of the abdomen compared with the black edges of *campestris* Mg. should prove a very useful and conclusive one. I find that there is variation in the colour of the marginal hairs, as one of my *campestris* has a considerable patch of black ones at the hind corner of the second tergite, and one of the *rostrata* has practically none, only a few odd inconspicuous ones at the same place. On the other hand, the pubescence of the thorax seems to provide another character so far as I can judge from my specimens, as all the hairs are black in *rostrata*, but in *campestris* are mixed black and yellow.—COLBRAN J. WAINWRIGHT, 172 Hamstead Road, Birmingham: *October 9th*, 1939.

Coleoptera in Dumfriesshire.—The following species of Coleoptera were taken by me last year (1938) in South-Eastern Dumfriesshire, and are additional to my previous notes. *Amara consularis* Dufts. occurred in my garden in autumn. It is rare in the county. *Agabus sturmi* Gyll., uncommon in slowly running water. *Gyrinus substriatus* Steph., locally plentiful on pools. *Microglotta pulla* Gyll., odd specimens swept. *Atheta diversa* Shp., one in moss in April. *Datomicra arenicola* Thoms., one from a dead rook in May. *Falagria sulcata* Payk., one under a stone in April, apparently scarce here. *Leptusa fumida* Erichs., in stumps of Scots fir, not common. *Tachinus subterraneus* Lin., not uncommon in fungi, carrion, etc. *Bolitobius trinotatus* Erichs., common in fungi in autumn. *Creophilus maxillosus* Lin., one in a dead hare. I have only met with this species here once previously when a farmer gave me one found on a dead lamb. *Staphylinus olens* Müll., scarce, one in my garden and several seen in hedge cuttings. *Philonthus aeneus* Rossi, sometimes common in carrion and in moss. *P. concinnus* Grav., rare, one swept on Nutberry Moss and another from flood refuse from the River Kirtle. *Gabrius vernalis* Grav., in flood refuse from the Solway shore. *Xantholinus longiventris* Heer, also in flood refuse in spring. *Calyptomerus dubius* Mshm., in cut reeds on Raeburn Flow. *Sciodrepa fumatus* Spen., several from a dead hare on Newton Moss in May. *Neuraphes angulatus*

Müll., swept on Nutberry Moss in May. *Hister striola* Sahlb., six specimens from a dead wood pigeon in June. *Onthophilus striatus* Forst., abundant in flood refuse. *Meligethes erythropus* Gyll., very scarce on Nutberry Moss. *Scymnus testaceus* Mots., rare on Nutberry Moss. *Helmis maugei* Bed., a specimen swept on Raeburn Flow in July—an unusual location. *Dryops ernesti* Des Gz., in flood refuse on the marsh, not uncommon. *Athous hirtus* Hbst., sometimes common in grassy lanes in summer. *Microcara testacea* Lin., local, on alder in July. *Cryptocephalus labiatus* Lin., on birch in June, local but not scarce. *Hydrothassa marginella* Lin., scarce here in my experience. *Mantura rustica* Lin., a few swept in a potato field. *Salpingus ater* Gyll., Eastriggs and Newton Moss, rare. *Apion marchicum* Hbst., occasionally swept. *Omias mollinus* Boh., swept from grass near Springfield, rare. *Cionus alauda* Hbst., I swept a specimen at Newton-on-Sark, 20.vii.38; the second I have met with here. *Coeliodes dryados* Gmel., locally common on oak. *Rhinoncus castor* Fab., local but sometimes not uncommon. *Balaninus villosus* Fab., one beaten from birch at Quentin's Hill in June. There are very few Scottish records of this weevil. *Balanobius salicivorus* Payk., common on sallows. *B. pyrrhoceras* Mshm., on oak, local and much less plentiful than the preceding. The following are too common to need special comment: *Bradycellus harpalinus* Serv., *Tachyporus hypnorum* Fab., *Tachinus rufipes* De G., *Philonthus laminatus* Creutz., *P. decorus* Grav., *P. fuscipennis* Man., *P. varius* Gyll., *Stenus similis* Hbst., *Epuraea depressa* Ill., *Byturus tomentosus* Fab., *Aphodius fimetarius* Lin., *Agriotes obscurus* Lin., *Crepidodera transversa* Mshm., *C. ferruginea*, *Otiorrhynchus singularis* Lin., *Strophosomus melanogrammus* Forst. and *Phyllobius argentatus* Lin.—JAS. MURRAY, 6 Burnside Road, Gretna, Dumfriesshire: *September 10th*, 1939.

Abnormal abundance of the larvae of Pieris brassicae L. (*Lep.*) *in South Devon.*—Cabbages, and particularly broccoli, in the Start area of South Devon appear to have suffered severely from the depredations of this species, both as a field crop and in the gardens, the plants being frequently reduced to a mere bunch of midribs. I noticed on September 17th one such field of broccoli in which the plants near the road were all reduced to bare stalks, though farther in they appeared to be still fairly green. The lane alongside was plastered with the crushed remains of the larvae, and on the low stone wall surrounding the field the larvae were crawling in hundreds. A few had attached themselves for pupation and a very few had already completed the change.

On looking for evidences of parasitism, one large female *Pimpla instigator* F. was seen running excitedly over the stones, but unfortunately, being pressed for time, I was unable to stop and watch her activities. A few Tachinid flies were sitting on the sun-warmed stones, but did not appear to be interested in the larvae and were not taken. Not a single group of the yellow cocoons of *Apanteles glomeratus* L., the usually abundant parasite of this species, was to be seen. A number of the larvae were observed to be stiff and hard and slightly distorted, and one such had developed a growth of greenish mould; several were hanging flaccid and rotten; these broke at a touch and were full of a dark brown fluid. A dozen or so active larvae were taken for observation and also a few of the stiff corpses. In a day or two the latter had become flaccid and rotten, while some of the active larvae had stiffened, in their turn to become flaccid, but the majority had spun up and duly pupated, still with no appearance of *Apanteles*. Of a dozen pupae four by 8th October were discoloured and almost empty shells. — K. G. BLAIR, 11 Durrington Park Road, Wimbledon, S.W.20: *September 24th*, 1939.

LARVAE OF BRITISH BEETLES.—I. A KEY TO THE GENERA AND MOST OF THE SPECIES OF BRITISH CERAMBYCID LARVAE.

BY FRITZ VAN EMDEN.
(Imperial Institute of Entomology.)

Whereas my previous papers on larvae of Coleoptera were more or less concerned with larval classification, the present key does not pretend to be a contribution towards the natural classification of Cerambycid larvae, but only the first of a series of larval keys, intended to enable the British forms to be recognised as safely as possible. The later parts of this series will be worked out as the material or knowledge becomes sufficiently complete.

All the thirty-six British genera of Cerambycidae, listed in Sir Thomas Hudson Beare's 'Catalogue of the recorded Coleoptera of the British Islands' (London, 1930), are included in the present key. The data concerning the following genera, however, have had to be taken from literature, as no larvae were available: *Leptidea*, *Stenochorus*, *Acmaeops*, *Lamia*, *Tetrops* and *Phytoecia*. Considerable uncertainty is inherent in this procedure, particularly as far as old descriptions must be relied on (*Leptidea*, *Stenochorus*; see note on the latter genus in list of material). The distinction of all or some of the species is, through lack of material, not yet possible in the genera *Phymatodes*, *Molorchus*, *Leptura*, *Strangalia*, *Grammoptera* and *Monochamus*. Any material helping to fill in these gaps would be greatly appreciated.

A few species likely to be introduced in timber, etc., are referred to in notes following the keys (indicated by figure in brackets). In order to make the key more useful to Continental students, those genera of adjacent countries that were available have also been incorporated in these notes. The keys are generic keys. As far as several species of a genus are British and are available, these have therefore been dealt with in the notes. In order to distinguish the extralimital forms from these species, the former have been put in square brackets.

Some of the characters so far used for the discrimination between Cerambycid larvae require the removal of the head from the prothorax, in which the former is usually more or less deeply embedded. It will be seen from the key that this dissection can easily be avoided by some slight changes in the arrangement of the characters and by using secondary manifestations of the characters of the frontal piece, epicranial halves and ventral foramina. This key to the subfamilies should stand not only for the British forms but for practically all the Cerambycid larvae of the world. In identification work I have often realised that some of the characters used by former authors * are difficult to judge or largely affected by the condition of the specimens. It is hoped that these difficulties will interfere to a considerably less degree with the use of the present key, almost all the characters of which have been tested in two years of routine work.

The material studied in preparing this paper consisted primarily in that of the British Museum (Natural History), which, through the courtesy of Dr. K. G. Blair, I could use freely and in my own material. Very important additions were borrowed from the Zoologisk Museum of Copenhagen, and my sincere thanks are due to Dr. Kai L. Henriksen. My thanks are also due to the donors of the material, as detailed in the list at the end of the paper.

1 (8) Legs present or absent; if absent or very small, mandibles with gouge-like cutting edge (fig. 1). Head transverse to subquadrate, wider behind the middle (1).

2 (7) Mandibles with oblique cutting edge, which meets the lower edge in a distinct (though somewhat rounded) angle (fig. 2). Legs present.

3 (4) Tentorial cross-arm in same plane as hypostoma, forming a bridge behind it (2), which divides the occipital foramen into an anterior and posterior portion. (This character can be realised, without dissection, from the membranous connection between the anterior foramen and the prothorax: in Aseminae and Lepturinae the gula is exposed or can be exposed by pushing back the front part of the prothorax (fig. 4). In the Prioninae and Disteniinae, however, after the front part of the prothorax has been pushed back, a skinfold becomes visible, which is attached to the front margin, or almost the front margin, of the gula and covers the middle part of the ventral surface of the head (fig. 3). Epicranial halves fused behind frons. Front margin of frontal piece (epistoma) usually (3) abruptly sloping and very strongly chitinised and its lower part projecting over clypeus, its upper boundary keel-shaped or salient in another way ... 1. PRIONINAE.

4 (3) Tentorial cross-arm internal, ventral surface of head only with a simple hole (fig. 4). Epistoma normal, not projecting over clypeus, its upper boundary not conspicuous.

5 (6) Epicranial halves separated behind frons, the hind margins conspicuous, strongly diverging, meeting in one point immediately behind frontal piece, the tip of the latter not, or inconspicuously, excised (can be seen without dissection) (fig. 5). Cerci present or missing.
.... 2. LEPTURINAE.

---

* The following is the more important literature used in preparing this paper: Schiödte, J. C., 1876, De Metamorphosi Eleutheratorum Observationes, Cerambyces: *Naturhist. Tidskr.* (3) 10: 369-458. Perris, E., 1877, Larves de Coléoptères: *Ann. Soc. Linn. Lyon*, 22-23 (1876-1877). Henriksen, K. L., 1914, Traebukkelarver, in Jensen-Haarup og Henriksen: *Danmarks Fauna* 16, *Biller* 3, *Traebukke*, p. 89-107, Copenhagen. Kemner, N. A., 1922, Zur Kenntnis der Entwicklungsstadien und Lebensweise der schwedischen Cerambyciden: *Ent. Tidskr.*, 43: 81-138. Saalas, U., 1923, Die Fichtenkäfer Finnlands II: *Ann. Acad. Sci. Fenn.*, A, 22: 349-432, 713-717. Craighead, F. C., 1923, North American Cerambycid Larvae: *Dom. Canada, Dept. Agr. Bull.* 27 (*N.S.*), *Techn.*

6 (5) Epicranial halves partly fused behind frons, hind margins slightly diverging, their dorso-interior part indistinct, not meeting immediately behind frons but separated by the posterior part of the frontal piece, which is rather deeply excised (can be seen without dissection) (fig. 6). Cerci present (4), though sometimes as very blunt tubercles. .... 3. ASEMINAE.

7 (2) Mandibles with a gouge-like cutting edge which passes into the lower and upper edges in a regular curve (fig. 1). Legs present or absent. Upper boundary of epistoma sometimes conspicuous. Dorsal margin of epicranial halves partly fused behind frons. Tentorial cross-arm in same plane as hypostoma, forming a bridge behind it, which divides the occipital foramen into an anterior and posterior portion (4), the hypostomal bridge between the mouth and the anterior foramen, however, much less narrowed in the middle than in Prioninae. Clypeus and labrum narrow .... 4. CERAMBYCINAE.

8 (1) Legs absent or one-jointed and very small. Mandible with oblique cutting edge (see fig. 2). Never more than two pairs of ocelli, usually one pair. Head oblong (5), sides parallel or converging behind. Tentorial cross-arm internal, ventral surface of head with a single hole. .... 5. LAMIINAE.

1. PRIONINAE.

Front margin of frontal piece with upper boundary almost straight, keel-shaped (6), lower boundary projecting over clypeus in four lobes (one lateral and one paramedian pair) of somewhat irregular shape, clypeus strongly transverse. Labrum much wider than long. Antennae with distinct though minute apical (third) segment. Posterior part of pronotum irregularly rugose, ampullae of abdomen finely rugose. Pleural discs present on abdominal segments 1—6 (*i.e.* oblong to round areas with irregular radial striation and a pore in the centre; size somewhat larger than that of a spiracle; situated somewhat ventrad and slightly caudad from the latter, visible after the skin has been allowed to become dry) .... *Prionus coriarius* L.

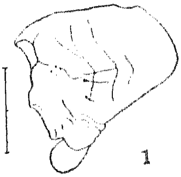
2. LEPTURINAE.

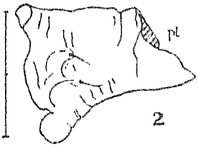
1 (8) Frontal piece divided by a transverse suture, or dorsal end of ninth abdominal segment with one or two spines, or mandibles slender, with cutting edge deeply notched in dorsal view, and apical part narrow, sub-parallel or somewhat dilated in side view (STENOCHORINA Reitt.).

2 (3) Dorsal end of ninth abdominal segment with an unpaired (7) spine, which is of less than a sixth of the length of the segment (8) and in some individuals extremely blunt. Ampullae present on abdominal segments 1—7 [if 6, see note 8]. Mandibles slender, rather smooth, cutting edge rather strongly notched, in full-grown larvae with a distinct tooth behind proximal angle of emargination. Frontal piece more or less distinctly divided by a transverse suture, except in young larvae .... *Rhagium* (9).

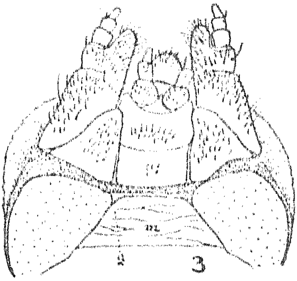
3 (2) Dorsal end of ninth abdominal segment without a spine, rounded. Ampullae present on abdominal segments 1—7.

4 (7) Head strongly flattened. Genae with a blunt longitudinal keel behind antennae, which is, however, indistinct in young larvae. Mandibles rather slender, rather smooth, the cutting edge rather strongly

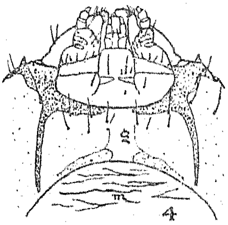

1



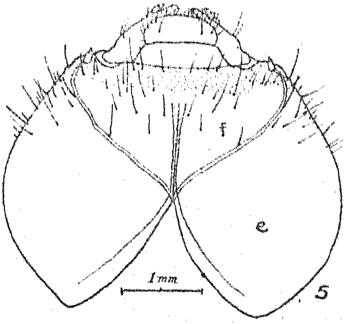
2



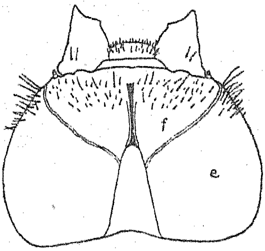
3



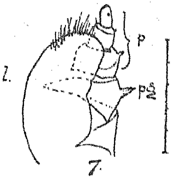
4



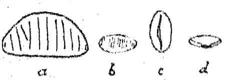
5



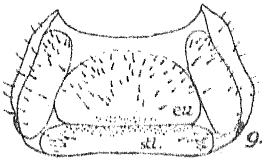
6



7



8.



9.

FIG. 1.—Right mandible of larva of *Cerambyx scopolii* L. Scale 1 mm.

FIG. 2.—Right mandible of larva of *Leptura rubra* L.—*pl*, striate plate. Scale 1 mm.

FIG. 3.—Gular region and ventral mouthparts of larva of *Parandra* sp. (Dominica) —*g*, gula; *m*, membranous connection.

FIG. 4.—Gular region and ventral mouthparts of larva of *Leptura rubra* L. —*g*, gula; *m*, membranous connection.

FIG. 5.—Dorsal view of head of larva of *Leptura rubra* L.—*e*, epicranial halves; *f*, frontal piece. Scale (to figs. 3—6 and 9), 1 mm.

FIG. 6.—Dorsal view of head of larva of *Tetropium gabrieli* Weise.—*e*, epicranial halves; *f*, frontal piece.

notched, apex subparallel or even somewhat widened and suddenly obliquely truncate. Antennae very small.

5 (6) Larger larvae, up to about 30 mm. in length. Ampullae with a few (about twenty) large and flat tubercles. Head wider than pronotum in full-grown larvae, frontal piece without a transverse suture. .... *Hargium inquisitor* L.

6 (5) Smaller larvae, up to about 12 mm. in length. Ampullae with numerous (about forty) small tubercles. Head somewhat narrower than pronotum. (After description and figures by Perris) ... *Acmaeops collaris* L.

7 (4) Head not flattened. Genae without a blunt longitudinal keel behind antennae. Mandibles stout, apical part not sub-parallel in side-view, but sub-triangularly pointed. (After description and figures by Perris) (10) .... *Stenochorus meridianus* Panz.

8 (1) Frontal piece without a transverse suture. Dorsal end of ninth abdominal segment without spines. Mandibles stout (11). Gula with one white suture (12), antennae very retractile, situated more laterad than dorsad of exterior edge of base of mandibles (LEPTURINA Reitt.).

9 (12) Tibiotarsus distinctly longer than femur. Labial palpi distant by twice their own width or more. Hypostoma short and strongly transverse, at least four times as wide as long in the middle.

10 (11) Ampullae present on abdominal segments 1—7. Head very strongly flattened. Hypostoma moderately short, with straight, diverging sutures .... *Grammoptera* (13).

11 (10) Ampullae present on abdominal segments 1—6. Head moderately flattened. Hypostoma extremely short and transverse, more than four times as wide as long, with sutures parallel in posterior half. .... *Alosterna tabacicolor* Deg.

12 (9) Tibiotarsus not or hardly longer than femur. Labial palpi distant by about their own width, sometimes more distant. Hypostoma moderately to strongly transverse, about 2½—4 times as wide as long in the middle. Head not flattened (14) ... *Leptura* and *Strangalia* (15).

3. ASEMINAE.

1 (4) Labrum cordiform, about as long as wide. Dorsal surface of mandible on inner part (covered by labrum) with a distinct, well-defined, somewhat oblique plate (see fig. 2). [Cerci pointed.] *

2 (3) Third joint of maxillary palpi about half the length of second. Labrum as long as wide, or somewhat longer. Plate of mandible large. Hairs of lateral margin of prothorax very dense. [Cerci short and more or less separate, shorter than basal width.] .... *Criocephalus* (16).

---

* Characters in square brackets apply to the British species, but not to all the known species.

FIG. 7.—Maxilla of larva of *Hylotrupes bajulus* L.—*l*, lobe; *pg*, palpiger; *p*, palpus. Scale 0.5 mm.

FIG. 8.—Chitinous plate of the ninth tergite of the larva of a, *Pogonochaerus hispidulus* Pill.; b, *P. hispidus* L.; c, *P. fasciculatus* De G.; d, *Tetrops praeusta* L. (after Kemner), ca. × 109.

FIG. 9.—Ventral surface of the prothorax of the larva of *Saperda populnea* L. —*eu*, eusternum; *st*, sternellum.

3 (2) Third joint of maxillary palpi almost as long as second (17). Labrum a little wider than long. Plate of mandible narrower. Hairs of lateral region of prothorax moderately dense. Cerci rather long and stout (18), about as long as basal width, subcontiguous at base, only their tip (about one-quarter to one-third of their length) strongly chitinised. Asperities of pronotum fine, not indivdually distinguishable with a × 16 hand lens .... *Asemum striatum* L.

4 (1) Labrum transversely rounded, much wider than long. Dorsal surface of mandible without an oblique plate along edge. Asperities of pronotum fine as in *Asemum* (19). [Cerci very blunt, subcontiguous.] .... *Tetropium gabrieli* Weise.

4. Cerambycinae.

1 (12) Legs 3—4-jointed, well developed, as long at least as maxillary palpi. Median longitudinal furrow of abdominal ampullae shallow, though often distinct.

2 (3) Three very distinct corneae in a straight transverse row, close to each other, laterad and ventrad of antennae. Lobe of maxilla setulose on inner margin. Ampullae with large and flat but distinct tubercles. Chitinisation of mouth frame entire beneath antennae. Antennae short, second joint transverse to scarcely longer than wide, third joint about twice as long as wide. Lateral region of prothorax clothed with rather sparse hairs of very different length. Basal part of mandible piceous-black, feebly separated from apical part, which is about two-thirds as wide as the basal height of the mandible. Posterior part of pronotum very coarsely longitudinally rugose ... *Cerambyx* (20).

3 (2) None, one or three distinct corneae present. The maxillary lobe bare on entire inner margin. Ampullae never tuberculate.

4 (5) Dorso-external process of maxillary palpiger small, much shorter than the last joint of the palpi. One, sometimes indistinct, oblong cornea just behind and ventrad to base of antennae. Antennae short, second joint subtransverse, third joint longer than wide, but not twice as long as wide (21). Lateral region of prothorax clothed with numerous short and fine hairs. Basal part of mandible pale, not darker than head capsule, separated by a deep dorsal transverse impression from apical part, which is dark, not longer than the pale part, and scarcely half as wide as basal height of mandible. Posterior part of pronotum finely, longitudinally rugose. Ampullae with two transverse furrows, one large, flat, longitudinal middle furrow, and one pair of lateral grooves. Front margin of head simple behind ventral mouth-parts. .... *Aromia moschata* L.

5 (4) Dorso-external process of maxillary palpiger nearly as long as or longer than last joint of palpi, rarely small, but then three distinct ocelli present. Lateral parts of dorsal region of prothorax with numerous long and soft hairs, between which short hairs may be present.

6 (7) Three very distinct corneae in a straight transverse row close to each other, laterad and ventrad to antennae, no tubercle dorsad to antennae. Ampullae with two very distinct transverse furrows. Mouth frame entire or sub-interrupted beneath antennae. Antennae with second joint one-third longer than wide. Epipharynx hairy at sides

only. The two joints of the labial palpi of equal length.
.... *Hylotrupes bajulus* L.

7 (6) One or no distinct cornea present. Posterior transverse furrow of dorsal ampullae not very distinct.

8 (9) Legs rather dark, brown, very conspicuous, femur longer than wide. Cornea very distinct, convex. Mouth frame distinctly though finely oblique-rugose, entire and strongly chitinised ventrad to antennae. Chitinised part of genae as wide as ocellus and base of antennae together, enclosing the former. A distinct tubercle at the ventral front margin of the head on the acetabulum, in which the condylus mandibulae rotates .... *Callidium violaceum* L.

9 (8) Legs pale, not very conspicuous, femur wider than long. Cornea absent or not convex. Mouth-frame not rugose, interrupted by a narrow, pale suture at the inner side of the eye just ventrad to antenna.

10 (11) Chitinised part of the first and second antennal joints considerably longer than wide, that of the first joint almost twice as long as wide.
.... *Pyrrhidium sanguineum* L.?

11 (10) Chitinised part of the second antennal joint hardly longer than wide, that of the first joint less than one-half longer than wide.
.... *Phymatodes testaceus* L.

12 (1) Legs very small to missing, very seldom almost as long as maxillary palpus, but then the median longitudinal furrow of the abdominal ampullae deep and sharp, the ampullae almost divided into two. Femur and tibiotarsus always wider than long, if leg present. Processus of the palpiger much shorter than the last joint of the palpi.

13 (14) Legs almost as long as the maxillary palpus. Genae strongly shouldered (the head not much narrowed almost up to the ocelli and suddenly obliquely truncate at the latter), with some long and fine hairs near front margin and some scattered much finer and shorter hairs behind these. Chitinisation of the mouth-frame interrupted beneath antennae. One ocellus. Median longitudinal furrow deep and sharp, the ampullae almost divided into two. Larva very slender. Pronotum finely striate in posterior half, without median furrow .... *Anaglyptus mysticus* L.

14 (12) Legs much shorter than maxillary palpus or missing. Genae never shouldered, as the head is gradually narrowed up to the base of the mandible.

15 (18) Mouth-frame not interrupted beneath the antennae. Genae with some long and very fine hairs near front margin and some scattered, much finer and shorter hairs behind these. Pronotum not striate behind, though longitudinally rugose, a distinct median furrow present behind. Larva of medium size, up to more than 20 mm.

16 (17) Legs distinct, 3-jointed. Three small ocelli (22), very close to each other in a vertical row not much laterad and ventrad from antenna. Ventral front margin of the head with very fine transverse rugae. Sclerotisation of front margin rather broad, embracing the stronger setae .... *Plagionotus arcuatus* L.

17 (16) Legs missing. One ocellus. Ventral front margin of the head finely longitudinally striate, sclerotisation of front margin rather narrow, just reaching the foveae in which the stronger setae are inserted.
.... *Clytus arietis* L.

18 (15) Mouth-frame interrupted (*Leptidea?*). Genae with rather numerous equal and rather strong bristles of moderate length (*Leptidea?*). Larvae small, seldom up to 17 mm. Legs very minute or missing.

19 (20) Ocellus not distinct, at most a faint suggestion of a pigmented spot present. Legs absent. Genal bristles very strong and long, equally curved backwards. Larvae moderately slender with rather even dorsal and ventral surfaces. The sclerotised spot above the ventral articulation of the mandible suggestive of a rather large ocellus (whereas the genuine remainders of the ocellus are at the *outer* ventral side of the antennae) .... *Molorchus.*

20 (19) Ocellus a distinct pigmented spot (*Leptidea?*), though a distinct cornea is not always present. Larvae very slender, with more projecting ampullae.

21 (24) Posterior part of pronotum sparsely striolate. Very minute legs present.

22 (23) Ampullae of abdominal segments 3—7 deeply bilobed and strongly projecting .... *Obrium cantharinum* L.

23 (22) Ampullae of abdominal segments simple, not much projecting. The spot at the ventral articulation of the mandibles evenly sclerotised.
.... *Gracilia minuta* L.

24 (21) Posterior part of pronotum smooth and dull. Ampullae more dilated and projecting than in *Gracilia*. No legs distinguishable.
.... *Leptidea brevipennis* Muls.

5. Lamiinae.

1 (6) Ninth abdominal segment with a chitinous spine or plate (fig. 8) at hind margin of dorsum (23).

2 (5) Ninth abdominal segment with a chitinous plate (fig. 8) which may bear—on a transverse keel—a short spine. Antennal ring closed (*Tetrops?*). Frons smooth.

3 (4) Ninth abdominal segment with a chitinous plate on which one to about twenty longitudinal ridges are visible (fig. 8 *a*—*c*). Ampullae with distinct, irregular tubercles; neither these nor the pronotum with asperities .... *Pogonochaerus* (24).

4 (3) Ninth abdominal segment with a chitinous plate, on which one transverse keel is visible, the centre of which extends into a short point (fig. 8*d*) .... *Tetrops praeusta* L.

5 (2) Ninth abdominal segment with a simple spine, not inserted on a chitinous basal plate. Antennal ring open. Frons with a transverse band of longitudinal striae in middle (25), entirely chitinised, so that the frontal sutures are distinct in their whole length. Hypostomal region strongly transversely embossed .... *Mesosa nebulosa* F.

6 (1) Ninth abdominal segment simple (23).

7 (8) Ninth abdominal segment swollen, as wide and high at apex as eighth but much more hairy. Frontal sutures visible in their whole length, wide and distinct to antennae. Head almost uniformly chitinised (26), largely free. Anus tri-lobed, in centre of apical truncature of ninth segment. Ampullae with the tubercles in two transverse rows, which are completely though not broadly interrupted on median line on most of the abdominal segments, without asperities. Prothorax with a large chitinised plate on dorsum and a narrower, strongly

transverse one on front part of sternum, the former entirely brown, except for the median line, the latter largely brown at sides.
.... *Agapanthia villosoviridescens* De G.

8 (7) Eighth and ninth abdominal segments more or less tapering to hind end. Frontal sutures at most visible on the anterior strongly chitinised part of head.

9 (10) Frontal sutures reaching antennal foramen, though very narrow. Ocellus large, inner margin more than twice as distant from mouth as that of antennal foramen. Ampullae present on segments 1—7, tuberculate and without asperities. Epipleurae of seventh to eighth abdominal segments strongly callose, the seventh segment conspicuously broader than the sixth (27). Anus tri-lobed. Pronotum velvety asperate on posterior half, prothorax conspicuously wider than the middle region of the body .... *Leiopus nebulosus* F.

10 (9) Antennal foramen closed behind.

11 (14) Ampullae with distinct tubercles or without either tubercles or skin asperities: in this case the anus is a simple transverse cleft.

12 (13) Ampullae without tubercles. The anus a transverse cleft. Posterior half of pronotum dull (28), with small, short, linear furrows. Pronotum defined anteriorly by a curved line. Behind this line some round, deep punctures in a transverse row (ex Kemner).
.... *Lamia textor* L.

13 (12) Ampullae with distinct, minutely granulated tubercles. The anus trilobate, though the dorsal lobe is almost semi-circular, leaving a sector of about 100 degrees for each of the ventral lobes. Larva slender, the head strongly depressed, mouth-frame fully twice as wide as high. Middle of gula distinctly raised. Dorsal ampullae with a longitudinal median furrow, but the transverse rows of tubercles not interrupted on median line (29) .... *Monochamus.*

14 (11) Ampullae without tubercles but with granulose or fine dull velvety asperities. Anus tri-lobate.

15 (16) Asperities of pronotum and ampullae extremely fine, velvety-dull. Sides of head rather parallel, genae strongly shouldered in front (in larvae of 2 mm. head-width and more), the mouth-frame broadly and strongly chitinised, forming a strong callus (defined from the genae by a notch) below antennae and in front of ocelli; the latter not very distinct. Head strongly depressed .... *Acanthocinus aedilis* L.

16 (15) Asperities of pronotum individually distinguishable as small brown or blackish chitinous granules.

17 (20) The sublateral muscular impression of pronotum transverse or semicircular or almost circular, pale. Dorsal ampullae of abdomen with two curved transverse furrows.

18 (19) Granules of abdominal ampullae extremely sparse, about 4—6 forming an irregular longitudinal row in the dorsal ampullae, the individual granules spine-like, longer than their basal diameter, some of them curved at apex. Posterior part of eusternum of the prothorax without granules, sternellum with a practically simple transverse row of conspicuous granules .... *Stenostola ferrea* Schrk.

19 (18) Granules of abdominal ampullae much more numerous, at least about 10—15 forming an irregular longitudinal row on the dorsal ampullae,

the individual granules much less pointed, not projecting by more than their basal diameter, the apex not curved. If the granules on the abdominal ampullae are conspicuous, then the posterior part of the eusternum of the prothorax with a transverse band of granules. .... *Saperda* (30).

20 (17) The sublateral muscular impression of pronotum (do not confuse with the lateral suture, which is always present and complete on ***posterior*** half) is linear, straight and long, brown at bottom; it runs from the anterior quarter to the posterior quarter rather close to the lateral suture, though more converging behind, and does not reach either the hind or front (*Phytoecia*?) margin, its posterior extremity being surrounded by the foremost granules. Dorsal ampullae of abdomen with a single transverse furrow.

21 (22) Two pairs of ocelli (one immediately outward and ventrad to antennae, the other somewhat ventrad to their axis, about thrice as far from the sub-dorsal ocellus as that from the antennae). Larva up to 27 mm. Granules not extending to middle of pronotum in front, decreasing in size towards base, of extraordinary size between the hind ends of the sublateral impressions. Ampullae of abdomen small, the borders of the transverse furrow callose and adorned with fine asperities. .... *Oberea*.*

22 (21) One pair of ocelli. Larva up to 20 mm. Granules extending at least to middle of pronotum in front, increasing in size from front end to [shortly before? v.E.] base. Ampullae of abdomen larger, the borders of the transverse furrow not callose [ex Kemner]. .... ***Phytoecia cylindrica* L.**

NOTES.

SUBFAMILIES.

(1) There seems to be no possiblity of including the larvae of the North American genus *Michthysoma* (see Craighead, 1923, p. 103) in the LAMIINAE, amongst which Craighead has placed it on adult characters. As Leng and Hamilton (1896, *Trans. Amer. Ent. Soc.*, **23**: 103) had shown much earlier that the adult 'lacks the essential characters of the sub-family Lamiinae,' there is no reason to try and include *Michthysoma* in the LAMIINAE.

(2) Disteniinae (not found in Europe and Mediterranean subregion) present the same character. They may be recognised by the epicranial halves being separated behind frons (see fig. 5). Front margin of frontal piece as in LEPTURINAE, etc.

(3) The character of the epistome is valid for all the native genera of middle and northern Europe, but is missing in a few other genera of PRIONINAE, of which at least *Parandra* has been introduced into Europe and has apparently been established in a tree near Dresden (see specimens of adults in Dresden Museum).

***See note in list of material.**

(4) Except in *Opsimus* (SAPHANINI) (Craighead, 1923, p. 35), which links CERAMBYCINAE with ASEMINAE by its nearly gouge-like cutting edge and lack of cerci. A larva of *Saphanus piceus* from the breedings of Herr Hermann Wiesner, of Meissen, Saxony, for which I am indebted to Herr Karl Dorn of Leipzig, presents all the characters of ASEMINAE, so that *Opsimus* may rather be included in the ASEMINAE than in the CERAMBYCINAE.

(5) Except in *Sternotomis variabilis* (larvae from Uganda in British Museum Nat. Hist.).

1. PRIONINAE.

(6) A genus which is somewhat likely to be introduced (see note 3) and two species of the adjacent parts of Europe are the following:

a (*b*, *c*) Front margin of frontal piece without upper boundary, lower boundary not projecting over clypeus, the latter moderately transverse. Antennae with a very distinct third segment, which is longer than wide. Labrum much longer than wide. Posterior part of pronotum and ampullae of abdomen with minute chitinous granules. No pleural discs. .... [*Parandra.*]

b (*a*, *c*) Front margin of frontal piece with upper boundary projecting in four blunt teeth, lower boundary projecting in one lateral pair of well-developed lobes, clypeus moderately transverse. Labrum approximately as long as wide. Other characters as in *Prionus,* but pleural discs not very distinct on abdominal segment 6 ... [*Ergates faber* L.]

c (*a*, *b*) Front margin of frontal piece with the upper boundary keel-shaped, but forming a pair of blunt and rather small though quite evident paramedian teeth, lower boundary projecting over clypeus in one lateral pair of well developed lobes, clypeus not very transverse. Labrum almost as long as wide. Pleural discs present on abdominal segments 1—3 .... [*Megopis scabricornis* Scop.]

2. LEPTURINAE.

(7) Dorsal end of 9th abdominal segment with a pair of spines. Frons divided by a transverse suture (except in young larvae up to 2 mm. width of head). Mandibles stout, strongly sculptured, with a long and rather deeply notched cutting edge, but without a tooth behind it, the dorsal surface with an oblique plate as in *Criocephalus* and *Asemum*. Ampullae present on abdominal segments 1-6. [*Toxotus cursor* L.]

(8) Spine of 9th abdominal segment more than half the length of the segment. Ampullae present on abdominal segments 1-6 only, tuberculate. [*Rhamnusium bicolor* Schrk.]

(9) The two British species of this genus can be separated as follows:

a (*b*) Transverse suture of frontal piece very distinct, even in young larvae of 2 mm. head width, complete, in bigger larvae widened near middle; the part anterior to the transverse suture distinctly darker and somewhat more reddish than the posterior part. Ampullae with strong tubercles. Angle between sides of support of the terminal spine about 100°. Front part of genae with only 2—3 strong and a few faint rugae .... *Rhagium bifasciatum* F.

b (*a*) Transverse suture of frontal piece very faint, incomplete towards middle, the anterior part scarcely darker; suture missing in young larvae. Ampullae with obsolescent tubercles, more rugose than tuberculate. Angle between sides of support of the terminal spine (measured somewhat in front of last bristles) about 120°. Front part of genae strongly rugose .... *Rhagium mordax* Deg.

As far as can be supposed from North American larvae of the genus, described by Craighead, the larvae of [*Pachyta*] will be very similar to those of *Rhagium bifasciatum*.

(10) Mandibles slender with subparallel tip: probably [*Gaurotes*] (according to description of American species by Craighead).

(11) Mandibles slender; young larvae, in which the frons is not, or probably not, divided, of [*Gaurotes*,] *Acmaeops* and *Hargium*.

(12) Gula with two protuberant sutures. Antennae fleshy, joints scarcely retractile into a large antennal foramen; the latter more dorsad than laterad of exterior edge of base of mandibles. [*Necydalis*] (ex Craighead).

(13) Of the four British species only *ruficornis* F. is available. The larvae have evidently been starved before being killed, so that they are strongly contracted. The ampullae are quite as in *Leptura*, whereas in the specimen of *Alosterna tabacicolor* at hand the tubercles are irregularly arranged and no transverse furrows are evident. Perhaps well-fed larvae of *Grammoptera ruficornis* would resemble *Alosterna* more closely with regard to the ampullae.

(14) Head strongly flattened. Mandibles slender and parallel. Ampullae present on abdominal segments 1-7: see key to Lepturinae, paragraphs 5 and 6.

(15) The larvae at hand of *Leptura* and *Strangalia* may be identified as follows: (all the known larvae of *Strangalia* have a smooth cutting edge of mandibles without an oblique plate and a more or less velvety and dull eusternum of prothorax, but these characters occur also in several species of *Leptura*. In the available larvae of British species of *Leptura* the latter character does not, however, occur. In all the species at hand the pronotum is devoid of velvety pubescence, meso- and metanotum are dull, vel-

vety-pubescent and devoid of tubercles (except for some single tubercles on the metanotum in *Lept. sanguinolenta*, forma *b*), the ampullae tuberculate, the tubercles shining and without velvety pubescence).

1 (8) Cutting edge of mandible smooth, without an oblique sculptured plate.

2 (3) Labial palpi distant by twice their width. Genae with a deep transverse furrow immediately in front of the ocelli, ocellus forming the dorsal end of a strong ridge, well-defined dorsally and in front, not well-defined towards the ridge, genae strongly chitinised. Hypostoma strongly transverse, gula slightly protuberant, rugose. Ampullae present on abdominal segments 1—7. Eusternum of prothorax entirely smooth, without velvety pubescence, though rather coarsely rugose. .... *Leptura scutellata* F.

3 (2) Labial palpi distant by their own width or by slightly more than their own width. Genae without a deep transverse furrow in front of eyes, these as well defined ventrally as dorsally.

4 (5) Ampullae present on abdominal segments 1—6. Eusternum of prothorax covered by velvety pubescence, dull. Temples strongly rugose immediately behind eyes, these somewhat protuberant towards sides. Labial palpi distant by slightly more than their own width. Hypostoma strongly transverse, gula somewhat rugose, sutures rather indistinct. Pronotum transversely rugose near apex, very coarsely vermiculate-rugose behind middle .... *Strangalia quadrifasciata* L.

5 (4) Ampullae present on abdominal segments 1—7. Eusternum of prothorax smooth and shining at least in middle. Temples not or scarcely rugose, eyes not protuberant towards sides. Labial palpi distant by their own width. Gular sutures not very distinct or missing (see list of material: *Leptura sanguinolenta* L.). Hypostoma moderately transverse, about thrice as wide as long in middle.

6 (7) Eusternum entirely smooth, shining, though conspicuously microreticulate and somewhat rugose. Pronotum very smooth in front half, very finely rugose on posterior half. Chitinisation of genae surrounding ocellus behind. Ocellus moderately convex. Smaller species. .... *Leptura sanguinolenta* L. forma *a*.

7 (6) Eusternum smooth though rugose in middle, with a very conspicuous patch of velvety pubescence on either side. Pronotum finely rugose on front half, rather coarsely rugose on posterior half. Chitinisation of genae not distinctly, or narrowly, surrounding ocellus behind. The latter oblong, slightly convex, not very conspicuous. Bigger species. .... *Strangalia maculata* Poda.

8 (1) Cutting edge of mandible with an oblique, dull, sculptured (more or less striate) plate (fig. 2). Eusternum of prothorax smooth, without velvety pubescence, though very conspicuously microreticulate. Labial palpi distant by their own width. Genae without a deep furrow in front of ocelli, the latter well defined. Ampullae present on abdominal segments 1—7. Hypostoma moderately transverse, about thrice as wide as long in middle, gula smooth, gular sutures distinct, raised. Pronotum coarsely rugose.

9 (10) Metanotum with a few (2—4) tubercles near middle. Chitinisation of genae not surrounding the ocelli behind. Ocelli moderately convex,

not prominent .... *Leptura sanguinolenta* L. forma *b*.

10 (9) Metanotum without tubercles. Chitinisation of genae surrounding the ocelli behind. Ocelli strongly convex, almost semicircular, rather prominent .... *Leptura rubra* L.

3. ASEMINAE.

(16) The species of *Criocephalus* can be distinguished as follows:

a (*b*) Cerci very distant (by about thrice to four times their basal diameter). Asperities of pronotum rather fine, hardly individually distinguishable with a × 16 hand lens. Hairs of lateral part of head not very long and not very plentiful, not quite reaching level of posterior end of the frontal sutures .... *rusticus* L.

b (*a*) Cerci rather close to each other, separated about by their own to at most double their basal width. Asperities of pronotum rather coarse, individually distinguishable with a × 16 hand lens. Hairs of lateral part of head very long and dense, reaching well beyond level of posterior end of frontal sutures .... *ferus* Muls.

[I have not been able to find any constant difference between English larvae of *Criocephalus ferus* and three larvae of *Spondylis buprestoides* found associated with an adult of this species, which I received as a loan from the Zoological Museum of Copenhagen. The characters of these larvae fully agree with those of the larvae I mentioned in a previous paper (1929, *Schriften phys.-ökon. Ges. Königsberg*, **66** (2): 283). The cerci in the five larvae at hand are somewhat longer and less distant, the whitish bases of the cerci more elevated and curved than in *Criocephalus rusticus*, but there is one specimen (from the Scilly Islands, where *Spondylis* does not occur) of *Criocephalus*, in which the cerci are even less distant and the emargination deeper than in *Spondylis*. The transverse furrows of the dorsal ampullae are, as a rule, more distinct in *Spondylis*. The characters drawn by Craighead from Perris's description and figures are not present in these larvae.]

(17) Third joint of maxillary palpi longer than the second, the latter transverse. Pronotum and ampullae without asperities, the latter with a few flat tubercles. Plate of mandible narrow, but clearly defined. Hairs of lateral region of prothorax rather dense, fine. Cerci distant, rather long, slender, without a conspicuous whitish base. [*Anisarthron barbipes* Schrk.]

(18) According to the descriptions by Kemner and Craighead the larvae of [*Notorrhina*] will probably run down to *Asemum*, from the European species of which genus *Notorrhina* may be distinguished by its contiguous, blunt, obtuse and very small cerci.

(19) Labrum and mandible as in *Tetropium*, but basal part of pronotum rugose, polished, without asperities, and cerci much

more distant than in *Criocephalus ferus*, rather strong, straight and dark, spines with a weakly developed pale support (similar to *Criocephalus*). [*Saphanus piceus* Laich.]

4. CERAMBYCINAE.

(20) The two reputed British species of *Cerambyx* are:

a (*b*) Postocular carina very strong, temples rugose with one strongly raised, ledge-like ridge at the hind end of the sclerotised area, the dorsal boundary of the antennal foramen somewhat produced and raised, somewhat tuberculiform, the outline of the head, thus, in dorsal view, with three apparent tubercles (supra-antennal tubercle, postocular carina and last ridge). Front margin of head broadly sclerotised, the brown band as wide in middle as the labrum long. Front margin of frontal piece with the upper boundary rather strongly marked and cariniform on each lateral third. Pronotum more coarsely sculptured. Smaller species, larvae up to about 55 mm. in length (in well extended condition) .... *scopolii* Fuessl.

b (*a*) Postocular carina less marked, temples coarsely but more evenly rugose, the last rugae of the sclerotised part coarse but hardly raised, dorsal boundary of the antennal foramen only slightly produced, but not raised, the outline of the head, thus, in dorsal view, with only one apparent tubercle (the postocular carina). Front margin of head less broadly sclerotised, the brown band about two-thirds as wide as the labrum long. Front margin of frontal piece with the upper boundary slightly marked on each lateral third, rounded in larvae up to 40 mm. length. Pronotum less coarsely sculptured. Large species, larvae up to 100 mm. in length (in well extended condition) .... *cerdo* L.

(21) Two species of larvae, which are occasionally introduced from abroad, may be distinguished as follows:

a (*b*) Antennae long, second joint more than $1\frac{1}{3}$ times as long as wide, third joint about three times as long as wide. Lateral region of prothorax with rather scarce, short hairs and single long hairs among them. Basal part of mandible piceous-black, feebly separated from apical part, which is about two-thirds as wide as basal height of mandible. Posterior part of pronotum coriaceo-rugose. Furrows of ampullae as in *Aromia*, but much less distinct. Front margin of head capsule with a transverse row of tubercles in adult larvae behind ventral mouth-parts. Margin of buccal cavity hardly chitinised and pale ventrad from antennae, genae pale throughout, except towards acetabulum mandibulae. (Imported from India)
.... [*Stromatium barbatum* F.]

b (*a*) Antennae, posterior part of pronotum and ampullae almost as in *Stromatium*, but lateral region of pronotum with rather dense short hairs and single long hairs among them. Furrows of ampullae very clear, front margin of head capsule simple behind ventral mouth-parts. Margin of buccal cavity strongly chitinised and dark ventrad from antennae. (Imported from N. America) [*Eburia quadrigeminata* Say.]

(22) One ocellus. Ventral front margin of the head smooth. Sclerotisation of front margin of head rather broad ventrad of

ocellus, though not very heavy, embracing some of the stronger genal setae ventrad of ocellus, none dorsad. Hind part of pronotum dull. [*Neoclytus acuminatus* F. (=*Plagitmesus erythrocephalus* F.)]

5. LAMIINAE.

(23) Ninth abdominal segment simple, but eighth with a transverse, rather long and narrow sclerite, which is longitudinally striate. Maxillary palpi two-jointed. Ocelli absent. Larvae about 10 mm. (ex Kemner). [*Exocentrus lusitanicus* L.]

(24) The following key for the distinction of the three British species of *Pogonochaerus* is essentially taken from Kemner's key (p. 137) and figures (p. 87):

1 (2) Chitinous plate of the ninth abdominal segment longer than wide, with a single longitudinal keel (fig. 8*c*) .... *fasciculatus* De G.
2 (1) Chitinous plate of the ninth abdominal segment wider than long, with numerous longitudinal keels.
3 (4) Chitinous plate of the ninth abdominal segment with 8—11 keels (fig. 8*a*), rather large (0.15 × 0.3 mm.). Maxillary palpi three-jointed (not including palpiger) .... *hispidulus* Pill.
4 (3) Chitinous plate of the ninth abdominal segment with 15—20 fine keels (fig. 8*b*), very small (0.02—0.09 mm.). Maxillary palpi two-jointed (not including palpiger) .... *hispidus* L.

(25) The longitudinal striae are rudimentary in [*Mesosa curculionoides* L.], but the row of deep foveae bearing setae (between which the striae are found in *M. nebulosa*) is very conspicuous. The transverse elevation on the hypostomal region is keel-shaped behind in *curculionoides*, its outer part raised as a blunt tooth.

(26) In *A. villosoviridescens* the head and thoracic sclerites are brown, whereas in [*A. asphodeli* Latr.] they are pale yellowish, and the frontal sutures thus are not very conspicuous. The characters, nevertheless, are the same.

(27) Epipleurae of 7th-8th abdominal segments not more callose than those of 6th segment, the 7th and 8th segments not distinctly wider. Pronotum without asperities, shining and slightly rugose on posterior part. Prothorax not wider than the mesothorax and the middle region of the body. The tubercles of the dorsal ampullae much stronger, in 2-3 almost regular rows.—Introduced in pseudobulbs of *Dendrobium*. [*Diaxenes dendrobii* Gah.]

(28) Posterior half of pronotum shining, coarsely rugosely punctured. Pronotum not markedly defined anteriorly, irregularly punctured in front, but without a transverse row. [*Dorcadion.*]

(29) The dorsal lobe of the anus not appreciably broader than the ventral ones (though higher and more humped), each of the

lobes forming a sector of about 120°. Larva very stout, the head rather convex on dorsal and ventral surfaces, mouth frame less than twice as wide as high. Gula not raised. Ampullae bisected by a very deep longitudinal furrow, the tubercles completely interrupted on median line, irregularly arranged.—Introduced in Cactaceae. [*Moneilema.*]

(30) The three British species of *Saperda* are easily distinguished in the larval stage:

1 (4) Ocelli (outwardly and ventrad of antennae) very distinct by their hyaline corneae. Granules of ampullae coarse and not very dense, easily individually distinguishable with a ×8 hand-lens, as large as the finest granules of pronotum. Granules of pronotum very variable in size, even on the anterior half of the asperate zone. Posterior part of eusternum and the sternellum of the prothorax with a transverse band of distinct granules (fig. 9).

2 (3) The largest granules of pronotum only slightly transverse, never more than one-and-a-half times as wide as long. The oblique sublateral impression rather shallow, not more deeply impressed along its hind margin. Granules of the ampullae small and blunt. Larvae up to 40 mm. .... *carcharias* L.

3 (2) The largest granules of the pronotum strongly transverse, more than twice as wide as long (at least apparently), especially along the sublateral impressions; the latter are very deep, particularly behind, where they are very sharply defined. The granules of the ampul'ae proportionately larger, more outstanding, and pointed. Larvae up to 20 mm. .... *populnea* L.

4 (1) Ocelli indistinct, though a *darker* knob in the strongly chitinised mouth-frame, just ventrad of antennae, may give the illusion of an ocellus. Granules of ampullae very fine and dense, hardly individually distinguishable with a ×6 hand-lens, much finer than the smallest granules of the pronotum. Granules of pronotum almost uniform in size on anterior half of the asperate area. Posterior part of eusternum of prothorax without any asperities, the sternellum with a transverse band of velvety asperities, which are not individually distinguishable at an enlargement of 25 diameters .... *scalaris* L.

[*S. perforata* Pall., which does not occur in Britain, is extremely similar to *scalaris* but may be distinguished by the much coarser and denser hair along the front margin of the pronotum, among which two longer pairs are present though hardly conspicuous—whereas they are very conspicuous in *scalaris*—and by the more equal granules of pronotum. In *perforata* the latter are, except for the interposed small ones, of practically equal size on the second to fourth fifths of the length of the asperate area. In *scalaris* they are decidedly smaller on the posterior half of this area. The sclerotised anterior margin of the frontal piece is darker, broader, and more sharply defined in *perforata*.]

(*To be concluded.*)

A NEW *PHYLLOPHAGA* (COL., SCARABAEIDAE) FROM THE CAYMAN ISLANDS, B.W.I. (RESULTS OF THE OXFORD UNIVERSITY BIOLOGICAL EXPEDITION TO THE CAYMAN ISLANDS, 1938).

BY MILTON W. SANDERSON.

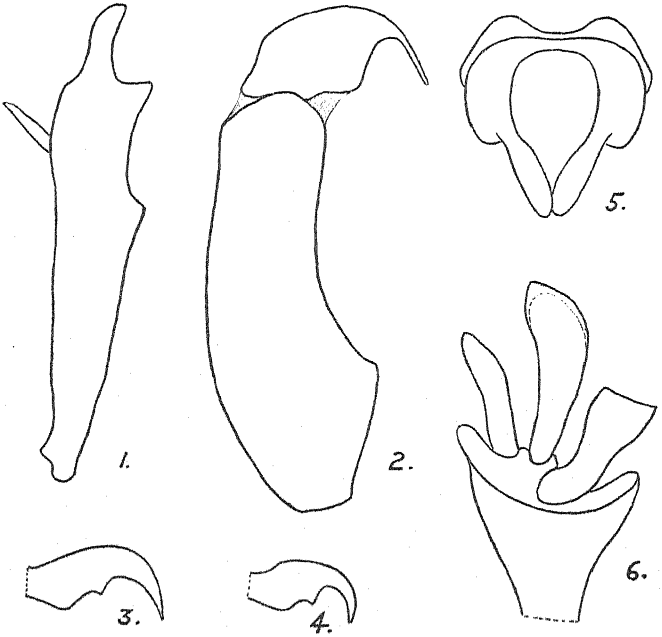
The Oxford University Biological Expedition to the Cayman Islands, from April 17th to August 26th, 1938, collected a single species of the Scarabaeid genus *Phyllophaga*. The species was found only on Grand Cayman, and is herewith described and figured. The types are deposited in the British Museum of Natural History, paratypes in the Oxford University Museum, and in the collection of the author.

Phyllophaga caymanensis sp.n.

Length: 9-12 mm.; width: 4.5-6 mm.

MALE. Body elongate, parallel; light reddish-brown to dark castaneous. Upper surface glabrous and shining. Head strongly transverse, convex from side to side; moderately and not closely punctured. Punctures on front separated from about once to twice their own diameters. Clypeo-frontal suture lightly impressed. Clypeus transverse, deeply emarginate, moderately strongly reflexed along margins, with punctures somewhat larger and less closely placed than on front. Antennae 8-segmented, the three-segmented club not shining and equal to the four preceding segments combined. Pronotum transverse with the margins entire, widest at the middle of the evenly rounded sides, slightly wider at base than apex. Pronotal punctures very fine, evenly spaced, and separated from about 2 to 4 times their diameters. Anterior angles of pronotum rectangular. Elytra as wide at base as pronotum; wider across middle. Punctures more strongly impressed than on pronotum, very evenly spaced and separated by about 2 to 3 times their diameters. Sutural costa nearly, the discal costa entirely, obsolete. Scutellum smooth and nearly impunctate. Pygidium transverse, evenly convex from base to apex, more strongly and closely punctured than elytra, and strongly margined. Abdomen slightly flattened at middle, nearly impunctate except along sides. Penultimate segment with the posterior margin obtuse, strongly carinate, and usually emarginate at apex. Fifth segment with a small transverse pruinose spot on each side near anterior margin, each spot rather sparsely set with long hairs. Last abdominal segment with a broad, transverse raised ridge extending the full width of the segment, smooth in front, and with a row of setiferous punctures. Metasternum very closely and conspicuously punctured at sides, becoming less punctured toward the middle, on which the punctures are nearly absent. Hairs very short and sparse and confined to the anterior part of metasternum. Posterior prosternal process perpendicular and deeply divided. Legs but slightly lighter than the dorsum. Anterior tibia with three well developed teeth, the middle tooth much more closely placed to the anterior one. Anterior tooth with outer edge in nearly same plane as tibia. Movable spur very short. Tarsal claw small, strongly curved and with a very small median tooth. Posterior tibia spinous as in other West Indian species though sometimes less conspicuously so. Tibial spurs free, very slender, aciculate; the longer spur reaching (in position) to about the middle of the second tarsal segment. Smaller spur about two-thirds the length of the first segment. Male genitalia with the claspers divided, symmetrical, strongly curved.

FEMALE. Averaging larger than male, generally darker in colour, and with the head and pronotum somewhat darker than elytra. Elytra more coarsely and somewhat more closely punctured than in male, broader behind the middle. Tooth of claw stronger in female. Fifth ventral abdominal segment with lateral pruinose spots. Larger spur of posterior tibia usually very broad and flattened, widest about the apical one-fourth; this spur considerably longer than first tarsal segment and fully as broad. Small spur broad and flat, nearly parallel, and about four times longer than wide. Pubic process of genitalia divided, each part elongate, clavate, with long bristly hairs at apices, and very loosely joining membrane at base. Posterior tibia somewhat broader and with the tarsi shorter than in male.



FIGS. 1–6.—*Phyllophaga caymanensis* sp.n. 1, fore tibia of male; 2, genitalia of male seen from left side; 3, tarsal claw of male; 4, tarsal claw of female; 5 caudal view of male genitalia; 6, apex of hind tibia of female showing tibial spurs.

Holotype male, allotype female, South Sound, Grand Cayman Island, B.W.I., light trap A, 17.vi.1938, C. B. Lewis and G. H. Thompson. Paratypes as follows: same data (7); same locality, 19.vi.1938 and 20.vi.1938 (17); Boilers, 28.iv.1938 (16); East End, light trap B, 14.v.1938 (2); West Bay, 17.viii.1938 and 18.viii.1938 (4); North Side, 14.vii.38 (1); Georgetown, 19.iv.1938 to 1.v.1938 (95). All of the specimens were taken in light traps.

The present species is not closely related to any of the known West Indian species. The genitalia of the male are somewhat similar to those of the Cuban *patruelis* Chev., but perhaps show a closer resemblance to *affabilis* Horn described from the United States. In one small female, the spurs on the posterior tibia are scarcely broader than those of the male. In the great majority of the females, however, these spurs are as described.

University of Arkansas,
Fayetteville, U.S.A.
August 24th, 1938.

CONCERNING THE NAMES OF TWO BRITISH WATER-BEETLES.

BY FRANK BALFOUR-BROWNE, M.A. (OXON. ET CANTAB.), F.R.S.E., F.Z.S., F.R.E.S., F.R.M.S.

(formerly Professor of Entomology at the Imperial College of Science, London).

Since the publication of my 'Systematic Notes upon British Aquatic Coleoptera,' my son, J. Balfour-Browne, has been examining literature with a view to tracing synonymies and has published a paper (1939, *Ann. Mag. Nat. Hist.* (11) 3: 97-114) in which he shows that *Copelatus agilis*, named *Dytiscus agilis* by Fabricius in 1792, is identical with that author's *Dytiscus haemorrhoidalis*, which he had already named in 1787. Further, Gmelin had also named this species *Dyt. schalleri* in 1790, Schaller having named it *Dyt. ruficollis* in 1783. The latter name, being an homonym, is ruled out, but, if the rule of priority is followed, this species must in future be known as *C. haemorrhoidalis*, and my son has adopted this name.

Our *Rantus pulverosus* was so named by Stephens in 1828. I have already given reasons why the name *consperstus*, given by Gyllenhal in 1808 and used for this species by various authors, probably does not belong to this species, but my son has discovered that in 1825 MacLeay recorded the species from Java under the name *suturalis*, which, by the rule of priority, should now replace the name given by Stephens, and this course has been adopted by my son.

These are examples of the slavish following of a rule which has been exceedingly useful, but which should now be applied with extreme caution, as it is causing more confusion than clarification in our species names. It may sound 'Irish,' but one of the most valuable points about any rule is the possibility of exceptions, and it seems to me that our difficulties with regard to this rule arise from the lack of imagination on the part of those who examine synonymy. The names *haemorrhoidalis* and *schalleri* have never been used for the *Copelatus*, and therefore there is no reason why we should now adopt them. Similarly, in the case of *Rantus pulverosus*, the name *suturalis* has never been associated with any insect except the Javan one, although Zimmermann and others have recognised its close relationship with *pulverosus*, so that here also we should make an exception to the rule of priority. In both cases I propose to continue to use the name that has hitherto been in general use rather than change to a comparatively unknown name which technically has priority. The literature concerning these species is already sufficiently confusing, and a further change would only add to the confusion.

Hook Place, Burgess Hill,
Sussex.
November 3rd, 1939.

[The two cases cited by Professor Balfour-Browne are not quite on a par. The name *haemorrhoidalis* Fab. has long been known as a synonym of *agilis* Fab., 1792. In Gemminger and Harold's Cat. Col., 1868, however, it was assigned to Syst. Eleuth., 1801, and therefore relegated to synonymy. Zimmermann, 1920 (Junk, Col. Cat., pars 71), gives the earlier date 1787, but calls the species *ruficollis* Schaller, 1783. This name being a homonym of *Dyt. ruficollis* Degeer, 1774 (now *Haliplus*) is not available and *haemorrhoidalis* Fab., 1787, automatically succeeds as the valid name of the species.

As regards the *Rantus* the Oriental species *saturalis* Macleay has never been actually associated till now with the European *pulverosus* Stephens, although the range of the latter was known to include the Sunda Islands and even Australia and New Zealand. The argument for retaining undisturbed the well-known name *pulverosus* is therefore stronger, though contrary to the provisions of the International Code. Two earlier names, *punctatus* Fourcroy, 1785 (*nec* Müller, 1776) and *conspersus* Gyllenhal, 1808 (*nec* Marsham, 1802) are both unavailable.—K.G.B.]

Henestaris halophilus Burm., Nabis lineatus Dahlb. and Salda elegantula Fall. (Hemipt.) in Kent.—A number of specimens of the interesting and local *Henestaris halophilus* Burm. were found on the Salt Marsh at Higham, Kent, during the last week of August. The species seems to prefer very damp situations where *Atriplex portulacoides* L. abounds. This insect is very difficult to find and only single specimens were found at any one time. *Nabis lineatus* Dahlb. also occurs sparingly in the same locality. It may be added that *Salda elegantula* Fall. occurs in profusion along the banks of the Medway, near Maidstone. This appears to be the first record of the capture of the insect in Kent. —A. M. Massee, East Malling Research Station, Maidstone, Kent: *November 6th*, 1939.

NOTE ON THE RECORD OF *CHRYSOPILUS NUBECULA* FLN. (DIPT.) AS A BRITISH SPECIES.

BY J. E. COLLIN, F.R.E.S., ETC.

In the last January number of this Magazine (*antea*, p. 12) Mr. H. Oldroyd recorded the above Leptid as British on the strength of a female specimen named by Dr. E. Lindner, of Stuttgart, noting at the same time that the specimen did not agree in certain details with the published descriptions of *C. nubecula* Fln. I have been able to examine this specimen and can state that it not only differs from females of *nubecula* in having an orange-coloured thorax with a square greyish-black patch in front of scutellum (instead of the uniformly pale brownish thoracic disc of *nubecula*), a much paler abdomen, especially about base, the presence of dark hairs on tergites 2-4, and other pubescence noticeably longer, especially at sides and on venter, but agrees in all these characters with a female specimen of *C. laeta* Ztt. in Kowarz's collection named by Loew, an identification which appears to be correct.

C. laeta is a little-known species which Dr. Lindner in 'Die Fliegen' has suggested might be only a form of *C. luteola* Ztt. This latter is unknown to me except from descriptions, but in these I can find little evidence to justify Dr. Lindner's suggestion. It is to be hoped that additional British specimens may soon be captured in order that this doubt concerning the validity of *laeta* as a distinct species may be settled.

Raylands, Newmarket.
November 6th, 1939.

Abnormal abundance of the larvae of Pieris brassicae L. (Lep.).—Dr. Blair's note (1939, *Ent. Mon. Mag.*, **75**: 256) anent the above encourages me to think it may be of interest to record my own experience of the larvae of this butterfly along the south coast of Pembrokeshire. The same ruthless destruction of Brassicaceous plants has been very noticeable—rape, broccoli, cabbage (including the wild cabbage which grows in a few places) have been eaten entirely to the mid-rib, leaving them as gaunt skeletons. Contrary to the conditions in south Devon, however, *Apanteles glomeratus* L. has been very much in evidence. In one place, near Amroth, where a small field of rape had been almost entirely destroyed, except at the centre, hundreds of larvae were trying to pupate on the wire netting which divided the field from the cliffs, but quite unsuccessfully. Every one that I could see had the yellow cocoons on or near the wasted bodies of the larvae. And on some nearby walls the same fate had overtaken them. In fact, out of many hundreds, I could find but three or four that seemed to have succeeded in getting into the chrysalis stage. In many other places the same fate has overtaken the larvae, though not so completely; but I should think that, of the vast hordes of these immigrants, very few will leave descendants in this district.—J. E. CAMPBELL-TAYLOR, Pinewood, Saundersfoot, Pembrokeshire: *November 6th*, 1939.

Strange behaviour of Astilbus (=Drusilla) canaliculatus F. (Col., Staphylinidae).—Recently I had given to me a copy of H. St. J. K. Donisthorpe's 'The guests of British Ants' (London, 1927) and upon looking up the records of *D. canaliculata* (p. 70, fig. 11) found that the recorded prey consisted only of various species of ants. As the following observations are somewhat at variance with those published, they may tend to throw additional light upon the habits of this interesting beetle, and perhaps stimulate other field workers to a close study of the species.

On May 12th, 1936, at 4.30 p.m., I was sitting on the grass verge by the roadside near Tubney Wood, Berks, and saw what I thought was an ant coming very slowly towards the place where I was sitting, dragging a fairly large fly. When first seen it was about four feet away; slowly and with much labour, it gradually came closer. When within two feet of me I saw it was not an ant, but a small beetle. Plucking a blade of grass, I touched the beetle, which immediately released its burden, and ran around in an excited manner, as would an ant in similar circumstances. After much running about it eventually secured the fly again and calmly resumed its slow walk towards the grass verge. As my time was getting short, I reluctantly boxed the specimens, recognising the beetle as *A. canaliculatus*, a species I had never actually found in ants' nests, though frequently in close proximity to them. If the fly was only intended as food, why did it go to all the trouble and labour of carrying it such a long distance? May it not be for storage as food for its future progeny? Dr. K. G. Blair has been good enough to confirm the identification and pronounce the insect to be a female. The fly has been kindly named by Mr. J. E. Collin as *Delia cilicrura* Rond. (Anthomyiidae).

A previous observation on the same species was made in my garden on June 28th, 1920, when I captured a male carrying a live aphis on the garden path, but no other note was made at the time. Both specimens, with their prey, are in the Hope Department, University Museum, Oxford.—A. H. HAMM, 22 Southfield Road, Oxford: *October 6th*, 1939.

Cis bilamellatus Fowler (Col.) in Sherwood Forest.—In the autumn of 1938, my niece, Mrs. H. Burleigh, was good enough to collect off some old birch trees in Sherwood Forest lumps of *Polyporus betulinus* Fr. and to send them to me. I was hoping thereby to obtain *Enicmus consimilis* Mann. I examined the stuff at the time of arrival, but, finding no beetles in it, put it aside in a box in the expectation that later on some insects then in the larval stage might breed out. I did not examine the fungus again till a few weeks ago, when I discovered a number of living *Cis*, and on killing and setting them found they were all the above species, showing how steadily this species has been spreading its range since its discovery by the Rev. T. Wood at West Wickham Wood in 1884. I have noted that the species has now been recorded from the New Forest, Guildford, Orpington, Highgate, Mickleham, Richmond Park, Watford, and Windsor Park; its discovery in Sherwood Forest shows that it is extending northward.

Dr. K. G. Blair, in his notes on this insect (1939, *Ent. Mon. Mag.*, **75** : 202) stating that this species was identical with *C. munitus* Blackburn, described in 1888 from Australian specimens, had apparently overlooked the note by the late Mr. G. C. Champion (1910, *Ent. Mon. Mag.*, **21** : 70), in which it was stated that *bilamellatus* and *munitus* were synonymous. I think there is little doubt that this species is a native of the Australian region, which has been accidentally introduced into Great Britain. I may mention that it has been taken in Tasmania.—T. HUDSON BEARE, 10 Regent Terrace, Edinburgh: *October 15th*, 1939.

Acalypterae: A question of nomenclature.—May I make a plea for uniformity in the spelling of the name given to this section of the Muscidae? The name was coined by Macquart, 1835, Diptères II, p. 354 (in Hist. Nat. Ins., Paris) in the form 'Acalypterae nob.' This is cited by L. Agassiz, 1842-6, Nomenclator Zoologicus, Diptera, p. 1, the entry reading 'Acalyptera Macq. Dipt. II (S. à B.) α priv. καλυπτὴρ operculum; Muscariae.' This makes it clear that the derivation was understood as being from καλυπτὴρ, a cover, a word very appropriate as a description of the squamulae, and not from καλύπτρα a veil or head-dress, which is not appropriate at all. As καλυπτὴρ makes its accusative καλυπτῆρα, it is wholly illegitimate to invent forms like Acalyptrata, which is used by various authors, one of the most recent being J. R. Malloch, 1933-34, Diptera of Patagonia and South Chile, Part VI. Nor should authors write loosely of the 'acalyptrate diptera.' If hybrid adjectives must be used, the form should certainly be 'acalypterate.' But as a name for Section III of the Muscidae Macquart's Acalypterae has first claim, bad Greek though it is as to its *termination*. There may be a case for writing Acalyptera, with Agassiz, for that is a perfectly correct Greek formation, and the word may be conceived either as a neuter plural adjective or as the plural of the neuter noun Acalypteron. If Acalypterae is regarded as an adjective (as doubtless Macquart meant) it stands for Muscidae Acalypterae, and though the result is neither Greek nor Latin it is intelligible, and has the advantage of priority. Personally I should hope that where a word is obviously used adjectivally it might be allowed to take a correct termination, in this case neuter, and that Acalyptera might stand as an adjective to Schizophora (A. D. Imms, 1925, Text-book of Entomology, 1st ed., p. 643).—L. W. GRENSTED, Oriel College, Oxford: *November 9th*, 1939.

Nycteribia biarticulata (Herm.) (Dipt.) in Somerset.—In September, 1933, Mr. F. H. L. Whish, of Lympsham, Somerset, sent me a Nycteribid which he had taken from a Lesser Horseshoe Bat, *Rhinolophus hipposideros minutus* (Mont.), obtained at Lympsham. The specimen, a female, was identified by Dr. Hugh Scott, of the British Museum (Nat. Hist.), as *Nycteribia (Celeripes) biarticulata* (Herm.), a Bat parasite which appears to have been taken in Somerset more often than in any other English county.—EUGENE O'MAHONY, National Museum of Ireland, Kildare Street, Dublin: *October 2nd*, 1939.

Society.

ENTOMOLOGICAL CLUB.—A meeting of the Entomological Club was held at 'Woodhouse,' Stroud, on July 26th, 1939, Dr. Harry Eltringham in the chair.

Members present in addition to the Chairman: Mr. H. Willoughby Ellis, Mr. Jas. E. Collin, Mr. W. Rait-Smith. Visitors present: Mr. Austin Richardson, Mr. T. Bainbrigge Fletcher, Mr. H. W. Holloway, Mr. Colbran J. Wainwright.

The party arrived during the morning and, notwithstanding the extremely bad weather that had recently been experienced, the flower gardens presented a wealth of colour and a walk round the greenhouses afforded much interest. Luncheon was served at one o'clock, after which an inspection of Dr. Eltringham's well equipped laboratory as usual gave pleasure to the guests. During the afternoon a car drive along the crest of the hills overlooking the Severn Valley presented what is probably one of the most beautiful views in this country, and was much enjoyed. On return, tea was served about five o'clock, after which those who could not stay the night returned to their destination after an interesting and happy day.—H. WILLOUGHBY ELLIS, *Hon. Secretary.*

END OF VOLUME LXXV.

INDEX.

PAGE
TITLE-PAGE i
CONTRIBUTORS iii
GENERAL INDEX iv
SPECIAL INDEX—
  COLEOPTERA vii
  COLLEMBOLA x
  DERMAPTERA x
  DIPTERA x
  HEMIPTERA xi
  HYMENOPTERA xi
  LEPIDOPTERA xii
  MALLOPHAGA xii
SPECIAL INDEX (*continued*)— PAGE
  NEUROPTERA xii
  ODONATA xii
  ORTHOPTERA xiii
  PSOCOPTERA xiii
  SIPHONAPTERA xiii
  TRICHOPTERA xiii
GENERA AND SPECIES NEW TO BRITAIN xiii
" " " SCIENCE xiv
ERRATA xvi
EXPLANATION OF PLATE xvi

INDEX TO CONTRIBUTORS.

PAGE
Arrow, G. J., F.R.E.S. 84, 204
Ashe, G. H. 249, 250
Aubrook, E. W. 88
Bagnall, R. S., D.Sc. .. 21, 56, 91, 188
Balfour-Browne, Prof. F., M.A., F.R.S.E. 276
Balfour-Browne, J., M.A., F.Z.S. 1
Bayford, E. G., F.R.E.S. 164, 178
Beare, Prof. Sir T. Hudson, LL.D., F.R.S.E. 279
Bedwell, E. C., F.R.E.S. 132
Benson, R. B., M.A., F.R.E.S. 110, 131
Blair, K. G., D.Sc., F.R.E.S. 70, 202, 203, 208, 227, 240, 249, 256, 277
Bretherton, R. F., M.A. 250
Britten, H., F.R.E.S. 29
Cameron, M., M.B., R.N., F.R.E.S. 36, 162
Campbell-Taylor, J. E., F.R.E.S. 19, 278
Carpenter, Prof. G. D. H., D.M., F.L.S., F.R.E.S. 89
China, W. E., M.A. 41, 132
Coe, R. L. 225
Collin, J. E., F.R.E.S. ... 104, 134, 278
Cox, L. G., F.R.E.S. 208
Daltry, H. W., F.R.E.S. ... 59, 79, 119
Donisthorpe, H. St. J., F.Z.S., F.R.E.S. 161, 176, 203, 208
Editorial 29, 187
Edwards, F. W., M.A., Sc.D., F.R.S. 241
Ellis, H. W., F.R.E.S. 20, 40, 90, 133, 186, 206, 280
PAGE
Fletcher, Fl.-Paym. T. B., R.N., F.L.S. 31
Grensted, Prof. L. W., D.D., F.R.E.S. 87, 174, 234, 235, 280
Guichard, K. M. 115
Haines, F. H., M.R.C.S., L.R.C.P. 126, 174, 178, 185, 202, 240
Hamm, A. H., A.L.S., F.R.E.S. 279
Hanitsch, R., M.A., Ph.D. 186
Harrison, Prof. J. W. Heslop, D.Sc., F.R.S. 60, 252, 253
Harwood, P., F.R.E.S. 208
Hignett, J. 63
Hincks, W. D., M.P.S., F.R.E.S. 236
Hinton, H. E., Ph.D. 179, 228
Hobby, B. M., M.A., D.Phil., F.R.E.S. 89, 119, 165, 174, 207, 254
Howe, R., B.Sc., A.R.C.S. 187
Jennings, F. B. 38, 113
Kaufmann, R. R. U. 102
Kerrich, G. J., M.A., F.L.S., F.R.E.S. 18
Lloyd, R. W., F.R.E.S. 70, 89, 207
Massee, A. M., D.Sc., F.R.E.S. ... 277
Morley, B. D. W., F.R.E.S. 83
Murray, J. 19, 119, 163, 255
Nixon, G. E. J., B.A. 80
Oldroyd, H., B.A. 12
O'Mahony, E. 124, 253, 280
Pearce, Rev. E. J., M.A., F.R.E.S. 32, 126, 208
Perkins, J. F., B.Sc., F.R.E.S. 82
Pickles, W. 155

PAGE

Pissodes notatus Fab., A diminutive example of 18
Polygonia c-album L. (Lep.) in Hampshire 174
Proctotrupinae in Dumfriesshire 163
Pyropterus affinis Payk. (Col., Lycidae) and its larva, 164; Further notes on 178
REVIEWS.—'The British Caddis Flies (Trichoptera),' by M. E. Mosely, 89; 'A Butterfly Book for the Pocket,' by E. Sandars, 89; 'A Monograph of the British Neuroptera,' by F. J. Killington, 89; 'An Ecological Glossary,' by J. R. Carpenter, 119; 'Anales de la Escuela Nacional de Ciencias Biologicas,' 119; 'A Key to the British Species of Corixidae (Hemiptera-Heteroptera),' by T. T. Macan, 132; 'The Macrolepidoptera of the World,' ed. by A. Seitz, 133; 'The House-fly as a Danger to Health,' by E. E. Austen, 4th ed. revised by J. Smart, 133; 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. St. J. Donisthorpe, 164; 'North Western Naturalist,' 164; 'Butterflies and Moths of the Wayside and Woodland,' by W. J. Stokoe, 165; 'Faunistischer Führer durch die Coleopteren-Literatur,' by S. Schenkling, 165, 207; 'Ergebnisse der Insektenbiologie, Band I,' by H. v. Lengerken, 165; 'Nomenclator Zoologicus,' ed. by S. A. Neave, 186; 'An Introduction to Modern Genetics,' by C. H. Waddington, 187; 'A Contribution to the Biology of North American Vespine Wasps,' by C. D. Duncan, 187; 'The Insect Legion,' by M. Burr, 207; 'The Principles of Insect Physiology,' by V. B. Wigglesworth, 207; 'Catalogue Coleopterum Daniae et Fennoscandiae,' ed. by W. Hellen, 208; 'The World of Insects,' by C. D. Duncan and G. Pickwell 240
Rhingia rostrata L. (Dipt., Syrphidae), Notes on, 255; A second British record of: its distinctions from R. campestris Meigen 225
Rhopalum clavipes L. (Hym., Crabronidae) nidificating in old gall of Saperda populnea L. (Col., Cerambycidae) 240
Sawflies (Hym., Symphyta), Four new Genera of British 110
Scymnus minimus Rossi (Col., Coccinellidae), A note on 250
Siphonaptera, Notes on Irish 253
SOCIETY.—Entomological Club 20, 40, 90, 133, 186, 206, 280
South London Entomological and Natural History Society 206
Sphinx pinastri L. (Lep.) in Hampshire 185
Staphylinidae (Col.), New Myrmecophilous, from East Africa, 36; New species of Asiatic, 162; Some new species of 127, 166
Streblocera fulviceps Westw. (Hym., Braconidae) in Dumfriesshire 119
Stenopelmus rufinasus Gyll. (Col., Curculionidae) 249
Stiphrolamyra comans sp.n., a new African Asilid (Diptera) 254
Syrphidae (Diptera), III, Notes on 104
Tribolium destructor Uytt., The occurrence of, in seeds in England 114
Triphleps (Hem., Anthocoridae), Additional records of British species of, 79; laevigata Fieber (Hem., Anthocoridae) new to Britain 29
Tortrix viridana L. (Lep.) in the New Forest 178
Typhlomyrmex richardsi (Hym., Formicidae), a new species of Ponerine Ant from British Guiana 161
Vanessa cardui L. (Lep.) in Hampshire 185
Victoria County History of Cambridgeshire, The—notes and corrections 18
Water-beetles, Colonization of new areas by, 174, 208; Concerning the names of two British 276
Xanthandrus comtus Harris in Dumfriesshire 19
Xantholinini (Col., Staphylinidae), Some new species of 221
Xylota xanthocnema Collin (Dipt., Syrphidae), Description of the female 224

SPECIAL INDEX.

[For the new genera, species, etc., described, see pp. xiii, xiv.]

COLEOPTERA.

PAGE

Acanthocinus aedilis (larva) 265
Acmaeops collaris (larva) 261
Acritus nigricornis 10
Acupalpus exiguus 9
Adonia variegata 10
Agabus sturmi 103, 255
Agapanthia villosoviridescens (larva) 265, 272
Agrilus biguttatus 88
Ahasverus advena 10
Aleochara lata, moesta 9
Alophus triguttatus 11
Alosterna tabacicolor (larva) ... 261, 268
Amara anthobia, bifrons, 9; consularis, 255; lunicollis, ovata ... 9
Anacaena globulus 103
Anaglyptus mysticus (larva) 263
Anisarthron barbipes (larva) 270
Antherophagus pallens 10
Anthicus bifasciatus 11
Anthonomus rosinae 11
Anthrenocerus australis 187
Anthribus variegatus 11
Aphodius foetens, obliteratus, porcus, scybalarius, subterraneus ... 11
Apion desideratum, difforme, ebeninum, 11; marchicum, 256; minimum, platalea, pubescens, 11; spencei, unicolor 38
Aromia moschata (larva) 262
Aseminae (larvae) 259, 260
Asemum striatum (larva) 262
Aspidiphorus orbiculatus 10
Astenus angustatus, 88; pulchellus 10
Astilbus canaliculatus 279
Atheta angustata, complana, 10; diversa, 255; inaequale, nigritula, pagana, xanthopus 9
Athous hirtus 256
Atomaria fimetaria, fuscata, peltata, umbrina 10
Atractelophorus arvernicus 100
Badister unipustulatus 9
Balaninus villosus 249, 255
Balanobius pyrrhoceras, salicivorus 256
Baris lepidii, 11; scolopacea 65
Barypithes pellucidus 11
Bledius spectabilis 10
Bolitobius trinotatus 255

PAGE

Bolitochara bella, lucida 10
Brachinus crepitans, explodens 88
Bruchus loti and abs. 176
Brychius elevatus 32
Bythinus burrelli, validus 10
Callidium violaceum (larva) 263
Calyptomerus dubius 255
Cantharis bicolor 11
Carcinops 14-striata 10
Cartodere ruficollis 10
Cerambycidae (larvae) 257
Cerambycinae (larvae) 271
Cerambyx (larvae), 262; scopolii (larva), 260, 271; cerdo (larva) 271
Cercyon atricapillum, 3; boletophagus, 4; lugubris, 9; nigriceps, 3; subsolanum, 4; terminatus, 9; triste 4
Ceuthorrhynchus cochleariae, constrictus, mixtus, moguntiacus, nigrinus, parvulus, punctiger, quercicola, rapae, roberti, rugulosus, viduatus 11
Chalcoides plutus 11
Chlaenius nigricornis 88
Cionus alauda 256
Cis alni, bidentatus, 11; bilamellatus, 202, 279; hispidus, 11; munitus 202, 279
Cissophagus hederae 11
Clytus arietis, 70; (larva) 263
Coccinella 7-punctata 159
Coeliodes dryados 256
Coeloctenus seriatus 2
Copelatus agilis, haemorrhoidalis, ruficollis, schalleri 276
Corymbites nigricornis 11
Cossonus linearis 203
Creophilus maxillosus 255
Criocephalus (larvae), 261; rusticus (larva), 270; ferus (larva) ... 270, 271
Cryptocephalus labiatus 256
Cryptohypnus 4-pustulatus 11
Cryptophagus acutangulus, badius, populi, pubescens, punctipennis, setulosus, umbratus 10
Cryptopleurum crenatum, minutum 115, 117
Ctesias serra 10, 40

PAGE
Cylindronotus laevioctostriatus (terat.) 206
Dacne bipustulata 10
Datomicra arenicola 255
Deronectes assimilis, 102; griseostriatus, 126; rivalis 102
Diaxenes dendrobii (larva) 272
Drilus flavescens 87
Dryops ernesti 103, 256
Eburia quadrigeminata (larva) 271
Eccoptogaster rugulosus 11
Elsianus tarsalis 181
Encephalus complicans 9
Endomychus coccineus 10
Epuraea limbata 10
Ergates faber (larva) 267
Euconnus fimetarius 10
Euplectus aubeanus 10
Euthia schaumi, scydmaenoides 10
Exocentrus lusitanicus (larvae) 272
Falagria sulcata 255
Gabrius bishopi, 10; vernalis 255
Gnypeta rubrior 220
Gracilia minuta (larva) 264
Grammoptera (larvae), 261; ruficornis (larva) 268
Graptodytes lepidus 102
Gronops lunatus ab. seminiger 113
Grynobius excavatus 1
Gymnetron collinum 59
Gyrinus substriatus 255
Haliplus spp., 32; fulvus, 34; laminatus 9
Hargium inquisitor (larva) 261
Hedobia imperialis 11
Helmis maugei 256
Helophorus aeneipennis, 103; brevipalpis, 174, 208; minutus 103
Heterelmis browni 179
Hexacylloepus abdominalis 183
Hippuriphila modeeri 11
Hister merdarius, neglectus, 10; striola 256
Hydraena gracilis 103
Hydroporus dorsalis, memnonius, planus, tessellatus 103, 175
Hydrothassa marginella 256
Hydrovatus clypealis 126
Hygrobia tarda 126, 239
Hylastes attenuatus 11
Hylastinus obscurus 11
Hylotrupes bajulus (larva) 261, 263

PAGE
Hybius ater 103
Kissister minima 10
Laccobius alutaceus, 103; australis 6
Lamiinae (larvae) 264, 272
Lamia textor (larva) 265
Laria rufipes 11
Lathelmis volckmari 103
Lebia crux-minor 105
Leiopus nebulosus (larva) 265
Leptidea brevipennis (larva) 264
Leptura (larvae), 261; rubra (larva), 266, 270; scutellata (larva), 269; sanguinolenta (larva) 266
Lepturinae (larvae) 259, 267
Leptusa fumida 255
Librodor hortensis 10
Limnebius truncatellus 103, 175
Limnius tuberculatus 104
Limnobaris pilistriata 11
Lissodema cursor, quadripustulatum 11
Longitarsus castaneus, ochroleucus 11
Lucanus cervus 70
Malachius marginellus 11
Mantura rustica 256
Medon apicalis 10
Megalelophorus aquaticus 103
Megarthrus denticollis 10
Megasternum boletophagum, obscurum 8
Megempleurus porculus 9
Megopis scabricornis (larva) 267
Meligethes brunnicornis, difficilis, 10; erythropus 256
Mesosa nebulosa (larva), 264, 272; curculionoides (larva) 272
Microcara testacea 256
Microcylloepus 179
Microglossa pulla 9, 255
Molorchus (larvae) 264
Monochamus (larvae) 265
Monotoma bicolor, brevicollis, longicollis, spinicollis 10
Mycetophagus multipunctatus 10
Myrmecoxenus vaporariorum 10
Necrophorus interruptus 10
Neobisnius procerulus, villosulus ... 10
Neoclytus acuminatus (larva) 272
Neoelmis spp. 228, 234
Neohydrophilus deplanatus, 7; occidentalis 6
Neuraphes angulatus 255
Nitidula flavomaculata, rufipes 10

PAGE
Oberea (larvae) 266
Obrium brunneum, 208 (2); cantharinum (larva) 264
Ochina ptinoides 11
Ochthebius exsculptus, 103; impressus 175
Odontaeus armiger 174
Olibrus corticalis 10
Omalium oxyacanthae 10
Omias mollinus 256
Onthophilus striatus 256
Ootypus globosus 10
Ophonus azureus, 88; rufibarbis ... 9
Otiorrhynchus porcatus 88
Oxyomus silvestris 88
Oxypoda spectabilis 9
Oxytelus insecatus 10
Paramecosoma melanocephalum 10
Parandra sp. (larva) 260, 267
Philonthus agilis, 10; concinnus, 255; debilis v. coloratus, 202; discoideus, 10; explanipes, 218, 219; furcifer, 201; intermedius, longicornis, mannerheimi, 10; micans, 201; rectangulus, 10; sanguinolentus ab. suturamonus, 201; splendens, 10; succicola, 218, 219; thermarum, umbratilis, ventralis 10
Phyllophaga caymanensis 274
Phyllotreta aerea, consobrina, nigripes, ochripes, undulata 11
Phymatodes testaceus (larva) 263
Phytobius 4-tuberculatus 11
Phytoecia cylindrica (larva) 266
Phytonomus trilineatus 11
Pissodes notatus 18
Plagionotus arcuatus (larva) 263
Platystethus capito, nitens 10
Pogonochaerus spp. (larvae), 261, 264; fasciculatus (larva), 272; hispidulus (larva), 272; hispidus (larva) 272
Prioninae (larvae) 259, 267
Prionus coriarius (larva) 259
Pseudopsis sulcata 10
Pseudotriphyllus suturalis 10
Psylliodes picina 11
Pterostichus coerulescens 88
Pyropterus affinis 164, 178

PAGE
Pyrrhidium sanguineum (larva) 263
Quedius cruentus 10
Rantus conspersus, pulverosus, suturalis 276
Reichenbachia fossulata 88
Rhagium (larva), 259; bifasciatum (larva), 268; mordax (larva), ... 268
Rhamnusium bicolor (larva) 267
Rhinoncus castor 256
Rhizophagus perforatus 10
Salpingus ater 256
Saperda (larvae), 266; populnea (gall), 40, (larva), 261, 273; carcharias (larva), 273; perforata (larva), 273; scalaris (larva) 273
Saphanus piceus (larva) 267, 271
Saprinus virescens 10
Sciodrepa fumatus 235
Scymnus minimus, 250; punctillum, 10; testaceus 256
Siagonum quadricorne 10
Sibinia signata 11
Sphaerosoma piliferum 88
Spondylis buprestoides (larva) 270
Staphylinus ater, compressus, 10; olens 255
Stenochorus meridianus (larva) 261
Stenopelmus rufinasus 249
Stenostola ferrea (larva) 265
Stenus circularis 10
Sternotomis variabilis (larva) 267
Strangalia (larvae), 261; quadrifasciata, 206, (larva), maculata (larva) 269
Stromatium barbatum (larva) 271
Syntomum aeneum 10
Synuchus nivalis 9
Tachinus scapularis, 10; subterraneus 255
Tachyporus formosus 9
Tetratoma fungorum 11
Tetropium gabrieli (larva) 260, 262
Tetrops praeusta (larva) 261, 264
Throscus obtusus 11
Toxotus cursor (larva) 267
Tribolium destructor 114
Trogophloeus gracilis 10
Tropiphorus tomentosus 11
Xyleborus dryographus, saxeseni ... 11
Xylophilus populneus 11

COLLEMBOLA. PAGE

Anurida, 192; denisi, 101, 192; trioculata, 101; tullbergi ... 93
Anuridella, 194; immsiana, 93, 195; submarina ... 195
Aphoromma, granaria, thalassophila 193
Archisotoma besselsi, 98; megalops, 99, 199; nigricans ... 198
Architomocerura, crassicauda ... 100
Axelsonia, 99, 101; australis, 102; littoralis ... 99, 101, 199
Brachystomella parvula ... 93
Entomobrya maritima, womersleyi 101
Folsomia achaeta, 58; diplophthalma, 57; distincta, 27; fimetaria, 28; garretti, 26; kingi, 28; litsteri, 56; manolachei, 102; monobechei, 58, 102; monophthalma, 59; penicula ... 57
Friesia claviseta, 189; poseidonis, 189; poseidonis f. inermis, f. quadrispina, f. tetracanthella, v. tumidicornis ... 190
Hypogastrura libyca, 189; nivicola, 93; packardi v. dentata, 92; willemi ... 91
Isotoma bipunctata, 97; poseidonis, 96, 199; sphagneticola, tenuicornis ... 97
Isotomiella, 95; distinguenda, minor 96
Isotomodes britannicus, 94; templetoni ... 197
Isotomurus alticola ... 100
Mesaphorura iowensis ... 23
Micranurida pygmaea ... 196
Onychiurus edinensis, 23; fimetarioides, flavescens, 94; flavidulus, 94, 197; halophilus, laminatipes, 94; minutus, 23; stachi, stachianus ... 101
Paranura, sexpunctata v. clavisetis 196
Paratullbergia carpenteri, macdougalli ... 197
Polycanthella acuminata, 59; thalassophila ... 22, 59
Proisotoma angularis, 25, 91; minima ... 26, 199
Pseudachorutes dubius, parvulus ... 191
Pseudachorutinae ... 188
Pseudosinella, 199; folsomi, halophila, 200; petterseni ... 199

PAGE
Stenaphorura absoloni, 197; axelsoni, 190; denisi, lubbocki ... 197
Tetracanthella kendalli, 24, 59; wahlgreni ... 23
Uzelia setifera, setifera s. sp. coniferarum ... 24
Zenyllodes armatus, armatus f. unispina ... 191

DERMAPTERA.

Dicrana biaffra, bettoni, burri, 237; frontalis, 236; separata, wigginsi 237

DIPTERA.

Acalypterae ... 280
Atypophthalmus ... 240
Botanobia dubia, fascipes ... 151
Brachyopa arcuata, 104; bicolor, 106; conica, dorsata, 104; insensilis, 105; pilosa, 107; plena, 108; scutellaris, 107; testacea ... 104
Camilla acutipennis, atripes, fuscipes, glabra ... 154
Carnus hemapterus, 153; setosus ... 154
Cheilotrichia ... 248
Chlorops ... 152
Chortophila anthracina, laricicola .. 147
Chrysopilus laeta, 278; nubecula ... 12, 278
Chrysotoxum octomaculatum ... 206
Conioscinella frontella ... 151
Delia cilicrura ... 279
Dicranota (Paradicranota) robusta 246
Diploneura glabra, nitidula, pilosella, rostralis ... 134
Discogastrella germanica ... 151
Dolichopus rupestris ... 235
Elachiptera bilineata, bimaculata, uniseta ... 150
Fannia aerea, 88; atripes, 145; canicularis, 138; ciliata, 145; clara, 139; cothurnata, 136; difficilis, 139; hirticeps, 141; immutica, 142; manicata, monilis, 145; mutica, 142; nidica, 136; nodulosa, 138; norvegica, 141; ornata, pretiosa, pubescens, 140; ringdahlana, 143; speciosa, 138; subumbrosa, 143; tuberculata, 141; umbratica, 144; umbrosa, 143; vespertilionis ... 139

PAGE

Geranomyia ... 245
Gonomyia (Idiocera) bradleyi, 247; punctata, sexguttata ... 248
Hammerschmidtia ferruginea ... 104
Heleomyza ... 148
Helomyza ... 148
Hilara chorica ... 235
Hydrellia argyrogenis, tenebricosa 153
Hydrotaea basdeni, 135; occulta ... 88
Idiocera ... 247, 248
Leria brachypterna ... 148
Limnophila filata ... 246
Limonia (Geranomyia) bezzii, 245; L. (Atypophthalmus) inusta ... 246
Megaselia septentrionalis ... 135
Melinia cannabina, karli, pullula .. 146
Meoneura ... 153
Mimogaurax niger ... 150
Neolimnomyia ... 246
Nephrotoma quadristriata, sullingtonensis, submaculosa, 243; British species, Table of ... 244
Nupedia debilis, dissecta, latipalpis, 147; patellans, pseudodissecta ... 148
Nycteribia biarticulata ... 280
Opsolasia adelpha, anthomyina, ctenocnema, 146; eriophthalma, 146, 147; meadei, 146; octoguttata, 147; parviceps, 146; roederi 146, 147
Ornitholeria nidicola ... 149
Oscinella nitidissima, posticata, trigonella ... 152
Oscinis ... 152
Oxydiscus dalei ... 246
Paradicranota ... 246
Phytomyza ilicis ... 81
Platytoma ... 248
Prionocera proxima, pubescens, subserricornis ... 245
Pseudogaurax ... 151
Rhingia campestris, rostrata .. 225, 255
Scatophaga squalida ... 88
Stiphrolamyra comans ... 254
Subclytia rotundiventris ... 206
Tipula bistilata, 241; coerulescens, holoptera, juncea, 243; pagana, serrulata, 242; winthemi ... 241
Xanthandrus comtus ... 19
Xylota xanthocnema ... 108, 224

HEMIPTERA.

PAGE

Acalypta marginata, nigrina ... 132
Aphis epilobii, sambuci ... 155
Athysanus maritimus ... 50
Campylomma verbasci ... 208
Criomorphus moestus, 43; williamsi, 45; spp. ... 46
Delphacodes douglasi ... 42
Deltocephalus spp. ... 50
Dicranotropis divergens, 48; hamata 49
Elasmostethus griseus ... 206
Euceraphis betulae ... 155
Eurysa douglasi, lineata, lurida ... 42
Henestaris halophilus ... 277
Liburnia douglasi ... 42
Nabis lineatus ... 277
Odontoscelis sp. ... 119
Orthostira macrophthalma ... 132
Pionosomus varius ... 119
Psammotettix cephalotes, nodosus, 51; spp., 52; striatus ... 50
Ribautiellus striatus ... 50
Salda elegantula ... 277
Stenocranus major, etc. ... 47
Triphleps laevigata, etc. ... 29, 79
Typhlocyba australis, 54; crataegi, 55; cruciata, 54; debilis, 53; froggatti, oxyacanthae, 54; scalaris, tenerrima, 52; ulmi ... 55

HYMENOPTERA.

Agenia variegata ... 87
Andricus fecundatrix, pilosus, 61; collaris, curvator, ferunculus, ostreus ... 62
Apanteles glomeratus ... 256, 278
Apethymus abdominalis ... 112
Atomostethus ephippium ... 111
Aulacidea hieracii ... 61
Barichneumon humilis ... 18
Biorrhiza aptera, pallida ... 61
Blennocampa affinis ... 112
Bombus hortorum, etc. ... 252
Chrysis ignita ... 252
Coelocrabro ambiguus ... 240
Cryptoserphus aculeator, laricis ... 163
Cynips kollari ... 61
Demopheles caliginosus ... 240
Diplolepis similis, longiventris ... 61
Disogmus areolator, basalis ... 163

PAGE
Eclytus fontinalis, etc. 82
Emphytus abdominalis, braccatus, serotinus 112
Exallonyx curtigena, brevicornis, ligatus, longicornis, microcerus .. 163
Figites laevigatus 18
Formica fusca, 40, 155; rufa 83
Halidamia affinis 111
Isocolus jaceae 61
Isosoma depressum, graminicola ... 62
Lasius niger 155
Melisandra morio 110
Meteorus insignis 131
Myiocephalus boops 18
Myrmica ruginodis, 40; scabrinodis 155
Neuroterus albipes, laeviuscula, lenticularis, quercus-baccarum, numismatis, vesicatrix 62
Opius compar, 81; ilicis 80
Paracodrus apterogynus 163
Paxyloma buccata 18
Perilissus 82
Phaenocarpa ruficeps 88
Phaenoserphus calcar, pallipes, vexator, viator 163
Pimpla instigator, 256; oculatoria 227
Polybia bistriatus 161
Pontania collactanea, herbaceae, proxima, 63; pedunculi, viminalis 62
Prionopelta 162
Proctotrupes gladiator, gravidator 163
Rhodites eglanteriae, rosarum, spinosissimae, 60; rosae 60, 206, 249
Rhopalum clavipes 240
Selandria cinereipes, morio 110
Stethomostus fuliginosus 111
Streblocera fulviceps 119
Tomostethus fuliginosus 111
Trigonaspis megaptera, renum 61
Tryphon 82
Typhlomyrmex richardsi, 161; clavicornis, var. divergens, rogenhoferi 162
Vespa pensylvanica, 187; vulgaris 164
Xestophanes brevitarsus 61

LEPIDOPTERA.

Acherontia atropos 31, 251
Agrotis saucia v. margaritosa, upsilon 251
Aglais urticae 202, 250
Argyroploce leucotreta 63
Bupalus piniarius 206
Celerio lineata livornica 31
Cidaria obstipata 251
Colias croceus, hyale 251
Cucullia chamomillae 206
Danaus plexippus 250
Depressaria heracleana, nervosa ... 253
Eligma hypsoides 20
Ematurga atomaria 206
Euchloë cardamines ab. andromorpha 206
Gonepteryx rhamni 19
Heliothis peltigera 251
Herse convolvuli 251
Hipocrita jacobaeae ab. confluens .. 206
Hippotion celerio 251
Leucania vitellina 251
Loxostege palealis 251
Lymantria dispar 31
Macroglossa stellatarum 251
Noctua c-nigrum 68
Nomophila noctuella 251
Nymphalis antiopa 251
Palimpsestis or 206
Phlogophora meticulosa 31
Phlyctaenia ferrugalis 251
Phryxus livornica 251
Pieris brassicae, 251, 252, 256, 278; napi, 251; rapae 206, 251
Plusia gamma 251, 252
Plutella cruciferarum, 252; maculipennis 31
Polygonia c-album 174
Sphinx ligustri, 251; pinastri 185
Tortrix viridana 178
Vanessa atalanta, 250, 252; cardui 31, 185, 250, 252
Sesia andreniformis 68

MALLOPHAGA.

(Mallophaga recorded from the Pacific Islands 13, 71, 120, 209)

NEUROPTERA.

Chrysopa perla 159

ODONATA.

Pyrrhosoma nymphula 126

ORTHOPTERA. PAGE
Ectobius lapponicus 206

PSOCOPTERA.
Elipsocus hyalinus 240
Psocus bifasciatus 240

SIPHONAPTERA.
Archaeopsylla erinacei 124
Ceratophyllus columbae, 125; farreni, 253; gallinae, 125, 253; garei, 125; hirundinis, 253; insularis, styx 125, 253
Ctenocephalides canis, 253; felis ... 124
Ctenophthalmus nobilis 125

PAGE
Dasypsyllus gallinulae 125, 253
Hystrichopsylla talpae 125
Ischnopsyllus hexactenus, octactenus, simplex 126
Leptopsylla segnis 125
Monopsyllus sciurorum 125
Nosopsyllus fasciatus 125
Paraceras melis 125, 253
Pulex irritans 124
Spilopsyllus cuniculi 124, 253
Typhloceras poppei 125

TRICHOPTERA.
Ithytrichia clavata 235

ADDITIONS TO THE BRITISH INSECT FAUNA BROUGHT FORWARD OR NOTICED IN THIS VOLUME.

COLEOPTERA.
Bruchus loti ab. holomelaenus *Donisthorpe* 177
,, ,, ab. ireneae *Donisthorpe* 177
Cossonus linearis *Fabricius* 203
Cryptopleurum crenatum *Panzer* ... 115
Gnypeta rubrior *Tottenham* 220
Philonthus debilis ab. coloratus *Tottenham* 202
,, furcifer *Renkonen* 201
,, sanguinolentus ab. suturamonus *Tottenham* 201
Tribolium destructor *Uyttenboogaart* 114

COLLEMBOLA.
Anurida denisi *Bagnall* 192
Anuridella immsiana *Bagnall* 93
Aphoromma thalassophila *Bagnall*. 193
Archisotoma megalops *Bagnall* 99
,, nigricans *Bagnall* 198
Architomocerura crassicauda *Denis* 100
Axelsonia littoralis *Moniez* 99
Folsomia achaeta *Bagnall* 58
,, distincta *Bagnall* 27
,, garretti *Bagnall* 26
,, kingi *Bagnall* 28
,, litsteri *Bagnall* 56
,, manolachei *Bagnall*, n.em. 102
,, manobechei *Bagnall* 58
,, penicula *Bagnall* 57
,, similis *Bagnall* 57
Friesia poseidonis *Bagnall* 189
,, ,, var. tumidicornis *Bagnall* 190
,, ,, f. inermis *Bagnall* 190
,, ,, f. quadrispina *Bagnall* 190
,, ,, f. tetracanthella *Bagnall* 190
Hypogastrura packardi var. dentata *Folsom* 92
,, willemi *Bonet* 91
Isotoma poseidonis *Bagnall* 96
,, sphagneticola *Axelson* 97
Isotomiella distinguenda *Bagnall* ... 96
Isotomodes britannicus *Bagnall* 94
,, templetoni *Bagnall* 197
Isotomurus alticola *Carl* 100
Onychiurus fimetarioides *Denis* 94
,, minutus *Denis* 23
Paranura sexpunctata var. clavisetis *Axelson* 196
Polyacanthella acuminata *Denis* 59
,, thalassophila *Bagnall* 22
Proisotoma angularis *Axelson* ... 25, 91
Pseudachorutes dubius *Krausbauer* 191
,, parvulus *Börner* ... 191
Pseudosinella halophila *Bagnall* 200
,, petterseni *Börner* 199
Tetracanthella kendalli *Bagnall* 24
Uzelia setifera s. sp. coniferarum *Bagnall* 24
Xenyllodes armatus *Axelson* 191
,, ,, f. unispina *Bagnall* 191

DIPTERA. PAGE
Botanobia fascipes *Becker* 151
Brachyopa insensilis *Collin* (sp.n.) . 105
,, pilosa *Collin* (sp.n.) 107
,, scutellaris *Desvoidy* 107
Carnus hemapterus *Nitsch* 153
Chrysopilus laeta *Zetterstedt* 278
,, nubecula *Fallen* 12
Dicranota (Paradicranota) robusta *Lundström* 246
Diploneura glabra *Schmitz* 134
,, pilosella *Schmitz* 134
,, rostralis *Schmitz* 134
Discogastrella germanica *Duda* 151
Elachiptera uniseta *Collin* (sp.n.) ... 150
Fannia atripes *Stein* 145
,, clara *Collin* (sp.n.) 139
,, hirticeps *Stein* 141
,, immutica *Collin* (sp.n.) 142
,, nidica *Collin* (sp.n.) 136
,, norvegica *Ringdahl* 141
,, ornata *Meigen* 140
,, pubescens *Stein* 140
,, ringdahlana *Collin* (sp.n.) .. 143
,, tuberculata *Stein* 141
,, umbratica *Collin* (sp.n.) 144
,, vespertilionis *Ringdahl* 139
Gonomyia (Idiocera) bradleyi *Edwards* (sp.n.) 247
Hydrellia tenebricosa *Collin* (sp.n.) 153
Hydrotaea basdeni *Collin* (sp.n.) ... 135
Limonia (Atypophthalmus) inusta *Meigen* 246
Megaselia septentrionalis *Schmitz* .. 135
Melinia cannabina *Stein* 146
Mimogaurax niger *Czerny* 150
Nephrotoma quadristriata *Schummel* 243
PAGE
Nupedia debilis *Stein* 147
,, latipalpis *Stein* 147
,, patellans *Pandellé* 148
Opsolasia eriophthalma *Zetterstedt* 146
Ornithoica nidicola *Frey* 149
Oscinella posticata *Collin* (sp.n.) ... 152
Oxydiscus dalei *Edwards* (sp.n.) ... 246
Prionocera proxima *Lackschewitz* ... 245
Tipula bistilata *Lundström* 241
,, pagana *subsp.* holoptera *Edwards* (subsp.n.) 245
,, winthemi *Lackschewitz* 241
Xylota xanthocnema *Collin* (sp. n.) 108, 224

HEMIPTERA.
Criomorphus williamsi *China* 45
Dicranotropis divergens *Kirschbaum* 48
Eurysa douglasi *Scott*, n. comb. 42
,, lurida *Fieber* 42
Psammotettix cephalotes *H.S.* 51
,, nodosus *Ribaut* 51
,, striatus *Linnaeus* 50
Stenocranus major *Kirschbaum* 47
Triphleps laevigata *Fieber* 29
Typhlocyba cruciata *Ribaut* 54
,, froggatti *Baker* 54
,, scalaris *Ribaut* 52

HYMENOPTERA.
Meteorus insignis *Muesebeck* 131
Opius ilicis *Nixon* 80

TRICHOPTERA.
Ithytrichia clavata *Morton* 235

LIST OF NEW GENERA, SPECIES, ETC., DESCRIBED IN THIS VOLUME.

COLEOPTERA.
ANORONOTUM *Arrow*, *Caroline Islands* 85
,, rufum *Arrow*, *Caroline Islands* 86
Astilbus canaliculatus s.sp. armeniacus *Cameron*, *Armenia* 163
Cercyon subsolanum *J. Balfour-Browne*, *Singapore* 4
COELOCTENUS *J. Balfour-Browne*, *Tanganyika* 1
,, seriatus *J. Balfour-Browne*, *Tanganyika* 2
Demera henningsi *Cameron*, *Nyasaland* 36
Dorcus carolinensis *Arrow*, *Caroline Islands* 84
Doryloxenus henningsi *Cameron*, *Nyasaland* 36

PAGE
Gauropterus abactus *Tottenham, S. Rhodesia* 221
,, adjacens *Tottenham, S. Rhodesia* 222
Gnypeta rubrior *Tottenham, Britain* 220
Hexacylloepus frater *Hinton, Brazil* 181
,, heterelmoides *Hinton, French Guiana* 183
Lepidiota carolinensis *Arrow, Caroline Islands* 86
Leptacinus persimilis *Tottenham, Chile* 223
Neoelmis abdominalis *Hinton, Columbia* 231
,, apicalis s.sp. angusta *Hinton, Peru* 233
,, grossa *Hinton, Bolivia* ... 228
Neohydrophilus occidentalis *J. Balfour-Browne, Nigeria* 8
NOTOHYDRUS *J. Balfour-Browne, Australia* 5
Nudobius morosus *Tottenham, S. Rhodesia* 223
Othius opacipennis *Cameron, Yunnanfou* 183
Philonthus debilis ab. coloratus *Tottenham, Britain* 202
,, explanipes *Tottenham, India* 216
,, sanguinolentus ab. suturamonus *Tottenham, Britain* 201
Phyllophaga caymanensis *Sanderson, British West Indies* 274
Scibalium rufotestaceum *Cameron, Khiva* 162
Staphylinus ejulans *Tottenham, Costa Rica* 170
Trigonopselaphus putidiusculus *Tottenham, Peru* 172
Zyras bustuarius *Tottenham, Rhodesia* 127
,, gnarus *Tottenham, Rhodesia* 130
,, henningsi *Cameron, Nyasaland* 37
,, intervulsus *Tottenham, S. Rhodesia* 186
,, obex *Tottenham, Rhodesia* ... 129
,, potor *Tottenham, Rhodesia* .. 128
,, reichenspergeri *Cameron, Nyasaland* 38
,, rhadamanthus *Tottenham, S. Rhodesia* 168

PAGE
,, spineus *Tottenham, S. Rhodesia* 186
,, spurcus *Tottenham, S. Rhodesia* 129
,, sudus *Tottenham, Natal* 169
,, vesanus *Tottenham, Cape Colony* 131
,, zopyrus *Tottenham, S. Rhodesia* 167

COLLEMBOLA.

Anurida denisi *Bagnall*, n.n., *France* 101
Anuridella immsiana *Bagnall, Britain* 93
Aphoromma thalassophila *Bagnall, Britain* 193
Archisotoma megalops *Bagnall, England* 99
,, nigricans *Bagnall, England* 198
Axelsonia australis *Bagnall*, n.n., *Australia* 102
Entomobrya womersleyi *Bagnall*, n.n., *Australia* 101
Folsomia achaeta *Bagnall, England* 58
,, distincta *Bagnall, Britain* 27
,, garretti *Bagnall, Britain* 26
,, kingi *Bagnall, Britain* ... 28
,, litsteri *Bagnall, Britain* .. 56
,, manolachei *Bagnall*, n.em., *Europe* 102
,, manobechei *Bagnall, Europe* 58
,, monophthalma *Bagnall, Roumania* 59
,, penicula *Bagnall, Britain* 58
,, similis *Bagnall, England* 57
Friesia poseidonis *Bagnall, Britain* 189
,, ,, var. tumidicornis *Bagnall, Britain* 190
,, ,, f. inermis *Bagnall, Ireland* 190
,, ,, f. quadrispina *Bagnall, England* 190
,, ,, f. tetracanthella *Bagnall, Scotland* 190
Isotoma poseidonis *Bagnall, Britain* 96
ISOTOMIELLA *Bagnall, Europe* 95
Isotomiella distinguenda *Bagnall, Britain* 96

	PAGE
Isotomodes britannicus *Bagnall, Britain*	94
,, templetoni *Bagnall, Ireland*	197
Polycanthella thalassophila *Bagnall, England*	22
Pseudosinella halophila *Bagnall, England*	200
Onychiurus flavidulus *Bagnall*, n.n., *Britain*	94
,, stachianus *Bagnall*, n.n., *Italy*	101
Tetracanthella kendalli *Bagnall, Scotland*	24
Uzelia setifera s.sp. coniferarum *Bagnall, Europe*	24
Xenyllodes armatus f. unispina *Bagnall, Ireland*	191

DERMAPTERA.

Dicrana burri *Hincks Belgian Congo*	237

DIPTERA.

	PAGE
Brachyopa insensilis *Collin, England*	105
,, pilosa *Collin, England*	107
,, plena *Collin, Bohemia*	108
Elachiptera uniseta *Collin, England*	150
Fannia clara *Collin, England*	139
,, immutica *Collin, England*	142
,, nidica *Collin, England*	146
,, ringdahlana *Collin, Wales*	143
,, umbratica *Collin, Scotland*	144
Gonomyia (Idiocera) bradleyi *Edwards, England*	247
Hydrellia tenebricosa *Collin, England*	154
Hydrotaea basdeni *Collin, England*	145
Oscinella posticata *Collin, England*	152
Oxydiscus dalei *Edwards, England*	246
Stiphrolamyra comans *Hobby, E. Africa*	281
Xylota xanthocnema *Collin, England*	108

HEMIPTERA.

Criomorphus williamsi *China, England*	45

HYMENOPTERA.

Apethymus *Benson, Britain*	112
Halidamia *Benson, Britain*	111
Melisandra *Benson, Britain*	110
Opius ilicis *Nixon, Britain*	80
Stethomostus *Benson, Britain*	111
Typhlomyrmex richardsi *Donisthorpe, British Guiana*	161

ERRATA.

Page 38, last line of first paper, for 'Reichenspergeri' read 'Reichensperger.'
,, 84, line 16, for 'British' read 'Bishop.'
,, 102, ,, 3 of second paper, for 'Kaufman' read 'Kaufmann.'
,, 146, ,, 3 from bottom, for '*roedei*' read '*roederi*.'
,, 165, ,, 28, for 'Sweden' read 'Switzerland.'
,, 200, ,, 15 from bottom, for '*Palimpstis*' read '*Palimpsestis*.'
,, 208, ,, 18 from bottom, for '*Compylomma*' read '*Campylomma*.'

EXPLANATION OF PLATE.

Plate I. James John Walker, M.A., R.N., F.L.S., F.R.E.S.

Indian Agricultural Research Institute (Pusa)
LIBRARY, NEW DELHI-110012

his book can be issued on or before ....

Return Date	Return Date